ENGINEERING NEWS-RECORD

MAY 5, 1955

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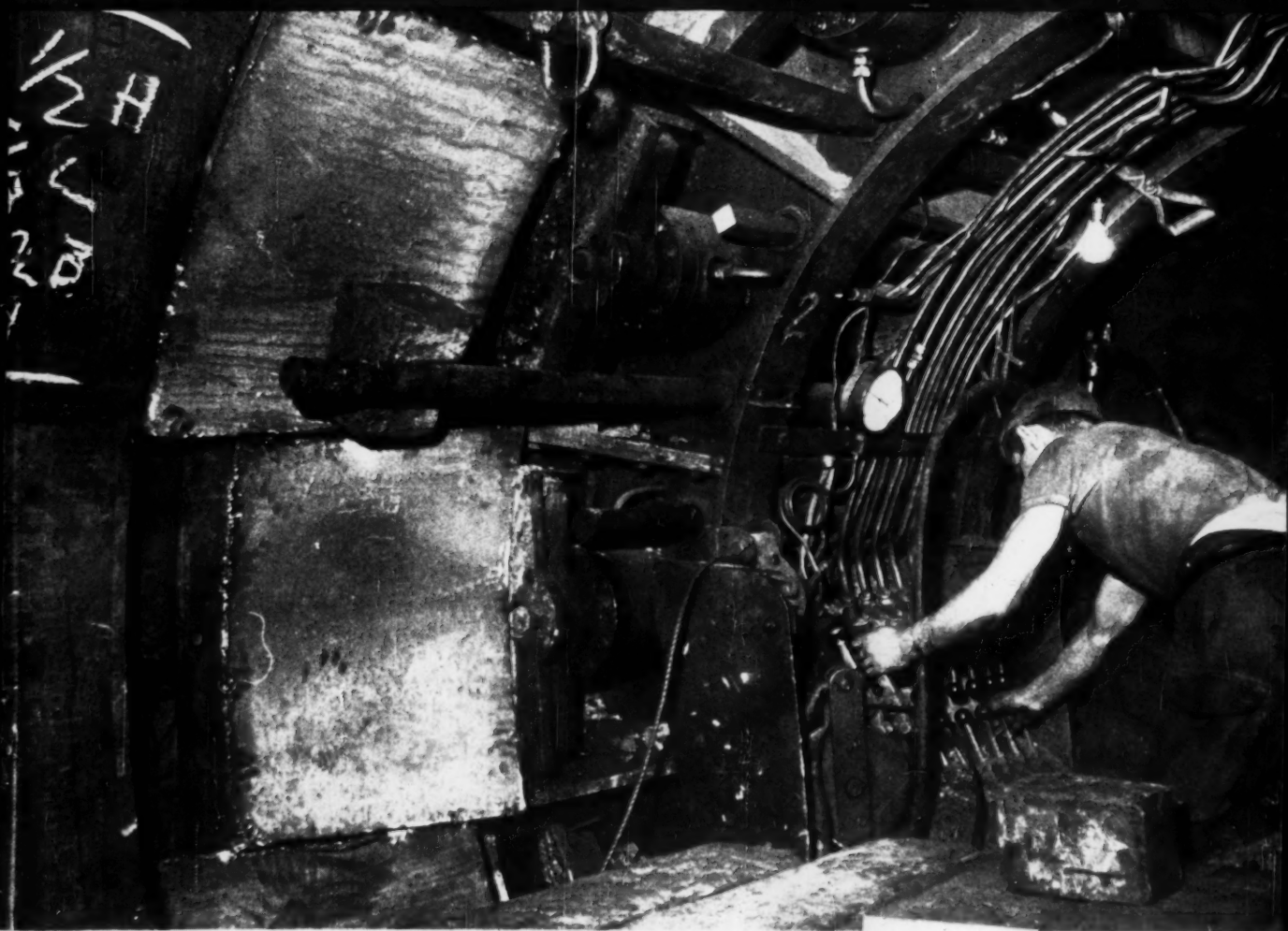
- Space trade dogs double need for factory



Tunneler under Thames jacks concrete

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UNIVERSITY MICROFILMS IN
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A McGRAW-HILL PUBLICATION

To Support Bridge or Building . . .

Specify Long, Straight-Driving, Easy-to-Inspect Armco Foundation Pipe

For practically any foundation need, there is a kind of Armco Foundation Pipe that will meet your requirements. You can be sure of the right foundation for industrial plants, municipal buildings and commercial structures as well as bridges for railways and all types of highways.

Here is condensed data on the four types of foundation pipe supplied by Armco:

ARMCO PIPE PILES

They drive extremely straight. Easily checked for alignment and watertightness after driving. Easy to weld on cut-off sections. Diameters: $8\frac{5}{8}$" to 22"; wall thicknesses .141" to .500". Lengths: to 90'.

ARMCO PILE SHELLS

These economical shells are lightweight, helically corrugated. Usually mandrel-driven. Available in 16 different diameter-wall thickness combinations. Supplied in exact lengths up to 60'.

ARMCO CAISSONS

Largest of Armco Foundation Pipe Products, Armco Caissons are available in diameters from 24" to 36"; wall thicknesses from .375" to 500". Caissons can be shipped in lengths up to 70 feet.

COMPOSITE PILES

Frequently, special conditions require foundation pipe with qualities of both pile shell and pipe pile. Or, pile shell with timber. These needs can be met with the wide size range of Armco Foundation Pipe.

After you have checked over this brief data, we suggest you write us about your specific foundation problem. We will be glad to work with you to find the most economical answer.

* * *

Foundation pipe is just one group in the 30 all-metal products supplied by Armco for industrial, commercial, highway and railway applications. For additional data on foundation pipe, send coupon. Armco Drainage & Metal Products, Inc., 5208 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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Successful bidder on 19 earth-fill dams

"Our Allis-Chalmers equipment has proved it can move more dirt at low cost . . . and let us be low bidder time after time. It gets a full share of credit for our success," says **Joe Duncan** of Arnett & Duncan, Corsicana, Texas.

TS-360 motor scrapers (15 yd struck; 20 yd heaped), like that shown at the left, are the big guns of the Arnett & Duncan fleet on earth-fill dam construction. Working with the TS-260's (11 yd struck; 14 yd heaped), they help make a high-production, low cost-per-yard team.

7,000 cu yd per day

. . . that's the kind of earth-moving production Arnett & Duncan get from their spread of Allis-Chalmers motor scrapers and crawler tractors.

Working on 1,000 to 1,200-ft hauls, the TS-360 and TS-260 motor scrapers are loading, hauling and dumping tough-to-handle waxy clay with 30 percent sand on a bed of shale. Even in this rough material, which normally slows down production, the Allis-Chalmers units have been cutting cycle time. The curved bowl bottom with offset cutting edge brings a real boost to loading cycles. Incoming dirt breaks up and rolls into the bowl, filling it with heaped loads . . . faster.

Lower cost per yard

Joe Duncan reports that his Allis-Chalmers equipment can dig, haul and place dirt for a lower-per-yard cost . . . move as much dirt as higher-rated capacity units.

"Our operators like our Allis-Chalmers equipment, too, because of the operating ease, riding comfort. You get a lot more production when the crew likes the equipment," adds owner Duncan.

Find out for yourself how productive Allis-Chalmers construction machinery can help improve your profit picture on a wide range of land improvement work. Ask for all the facts—and a working demonstration of real dirt-moving efficiency. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead...*move ahead*
...and stay ahead with ALLIS-CHALMERS

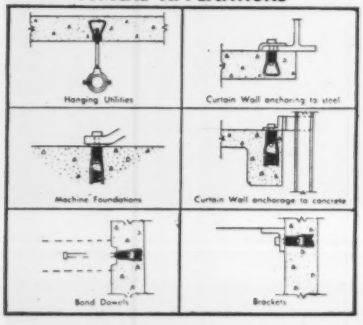
New Richmond Structural Concrete Inserts

With sufficient strength and safety for permanent fastening to concrete.

Available in ½" to 1½" diam. in strengths to 65,000 lbs. in 3,000 psi concrete

The *new* Richmond Structural Concrete Inserts are prefabricated from a special design which distributes the bolt stresses into the concrete for greater strength than any previously known device. Certified tests of these units in concrete at 3,000 p.s.i., verify this claim and permit design engineers to approach the problem of fastening appurtenances to structural concrete with greater security than has been possible in the past.

TYPICAL APPLICATIONS



The new Richmond Bulletin on Structural Concrete Inserts gives you complete information about these inserts and their varied uses. Send for it and the Richmond Handbook showing the full line of Tying Devices, Anchorages and Accessories for concrete construction. Write to:

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Low price is only the beginning with this rugged turbine pump. Fairbanks-Morse built-in features keep annual costs even lower by providing longer, trouble-free performance; simplified maintenance; greater flexibility.

Here are just a few of the features that make the F-M Pomona Pump such an outstanding investment for raw water supply, air conditioning, refrigeration, cooling towers, sump pumping, dewatering, etc.

- Water lubrication. Packing box, impeller adjustment above ground; can be reached without interrupting pump service
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- Special bearings, bearing retainers and pump bowls designed for maximum efficiency and long life

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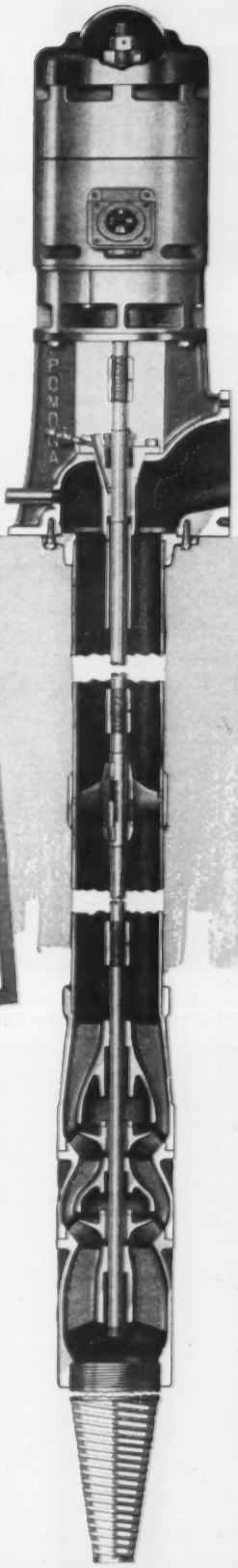

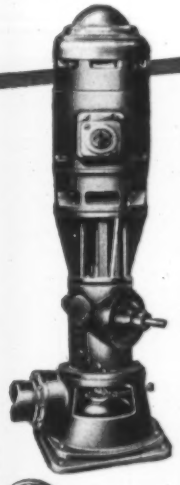

Seven Fairbanks-Morse pump factories in the United States, Canada and Mexico build the world's greatest variety of hydraulic combinations offered by any manufacturer of liquids-moving machinery.

Also available for combination drive with top mounted unidrive motor.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

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Cutting costs is the primary function of portable conveyors

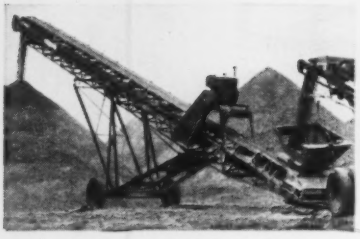
To make the greatest cost savings, portable conveyors must:

. . . have quality construction for long life and trouble-free operation. They must be available in the length and capacity range to suit your needs. They must be available with the features and accessories you want—screens, power hoists, pneumatic or steel wheels, gas or electric drives, etc.

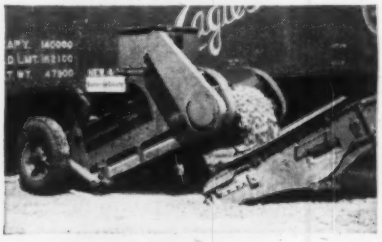
They must be easy to move around the yard . . . easily towed from job to job. They must withstand constant use and frequent movement.

Shown above is the portable conveyor of advanced design, the Barber-Greene 363. Shaft and gear reducer drive—no chains—no sprockets, full swiveling wheels, Acme take-ups and many other exclusive features.

Shown below are other models in Barber-Greene's complete line of cost-cutting conveyors.



Model 374 cuts cost at high capacity. With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.



Model 358 cuts cost of car unloading. Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.

Model 362—low-cost, high-quality portable. Three-roll carriers, swivel wheel truck, and many other features not available on conveyors of this low-price range, are standard on the 362.

56-8-PO

Write for literature on any portable in the Barber-Greene line.

Barber-Greene BG

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

NEW TD-20

NEW TD-20

NEW TD-20

...with NEW yardage-boosting control

NEW 134 hp International®

. . . . SIX SPEEDS, FULL

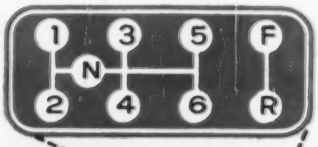
EXCLUSIVE TD-20 "Shuttle-Bar" shifting, *forward!* Just push the "Shuttle-Bar" forward. "Sweep" the gearshift lever into the "power" gear needed—for full blade, full speed dozing. And you're set for rolling the earth. You have a "heavy-work" gear choice for every need and condition. First gear forward (1.5 mph) gives you 27,500 pounds of push or pull at rated engine rpm!

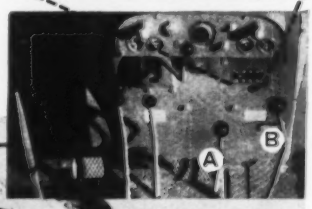
Shift through all six speed ranges with a "single stick"

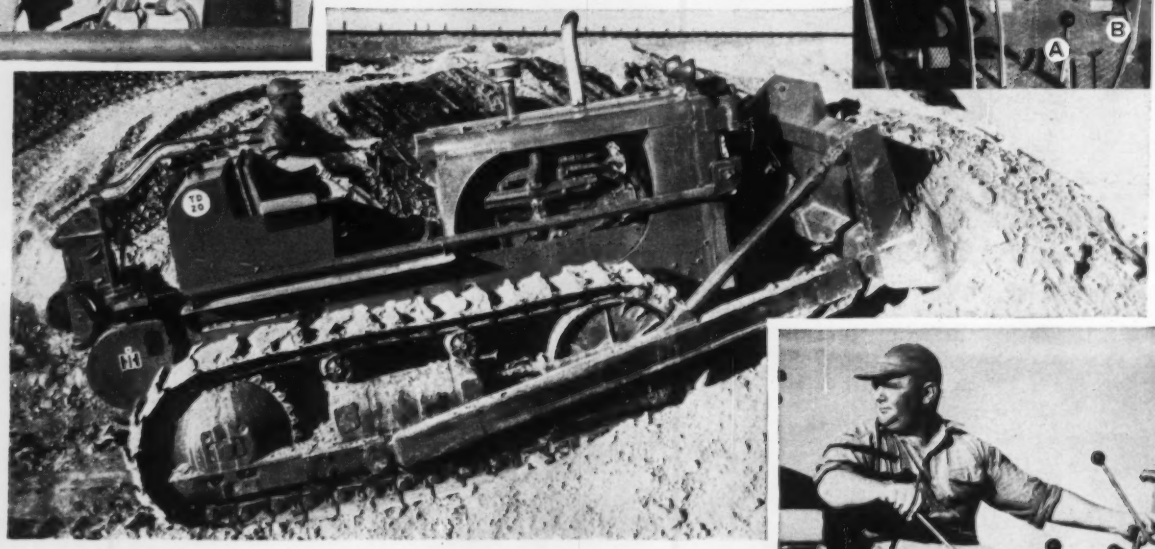
Reverse direction in any speed range with "Shuttle-Bar"

NEW in work-capacity, the International TD-20 gives you 134 net diesel engine hp. Revolutionary, it gives you exclusive "Shuttle-Bar" control teamed with an exclusive new 6-speed, "single stick" full reverse transmission! New TD-20 cycle-speeding "Shuttle-Bar" control gives you full and instant advantage of six speed ranges, forward or reverse. Never before has big crawler gear-changing and direction-changing been so fast, so easy, so profit-productive!

Look at the TD-20 control lever grouping! Lever "A" is for shifting gears through any of the six working speed ranges. Lever "B" is the exclusive "Shuttle-Bar" which operates forward-reverse direction-changing — providing six speed ranges forward; six, reverse! Inset view shows the gear shift pattern. Visualize how one quick arm sweep can shift the TD-20 from second to fifth gear and from forward to reverse!







EXCLUSIVE TD-20 "Shuttle-Bar" shifting, *reverse!* Hundreds of extra cubic yards moved daily can result from TD-20 cycle-speeding shuttling action! Sweep the gearshift lever into the desired travel gear —pulling the "Shuttle-Bar" back with the same easy arm sweep. And you're set for highballing back for the next push, as fast as 8.4 mph!

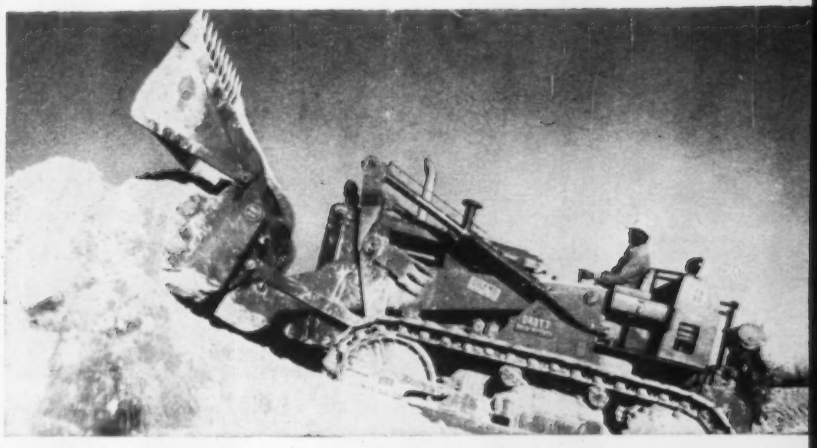
TD-20 crawler tractor

REVERSE, "SHUTTLE-BAR" CONTROL

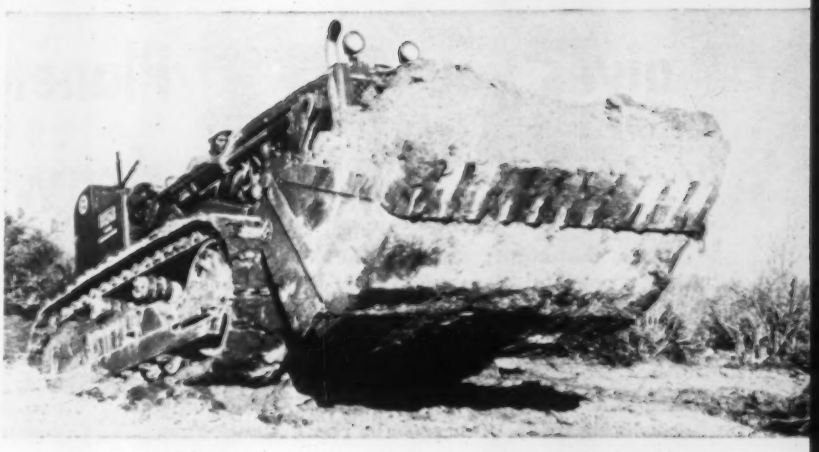
New handling ease and speed boost daily yardage with

NEW INTERNATIONAL DROTT® TD-20 Four-in-One

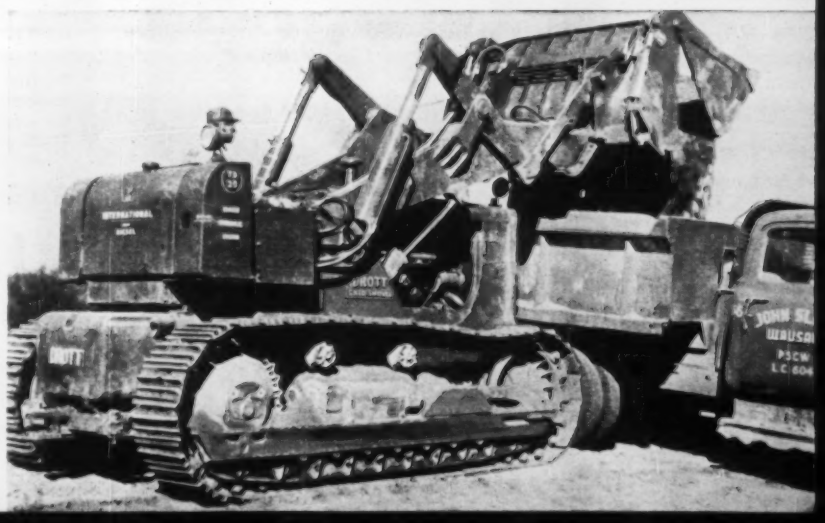
Using the International Drott TD-20 4-In-1 in bull-dozer position for earthmoving or stockpiling usually calls for returning the unit to "next push" position. For speedy recovery, without "turn-around" or gear-shift delay, you simply use exclusive TD-20 "Shuttle-Bar" shifting! New 7-roller TD-20 4-In-1 track frame gives you a full 109" of track on the ground — for unsurpassed balance and stability.

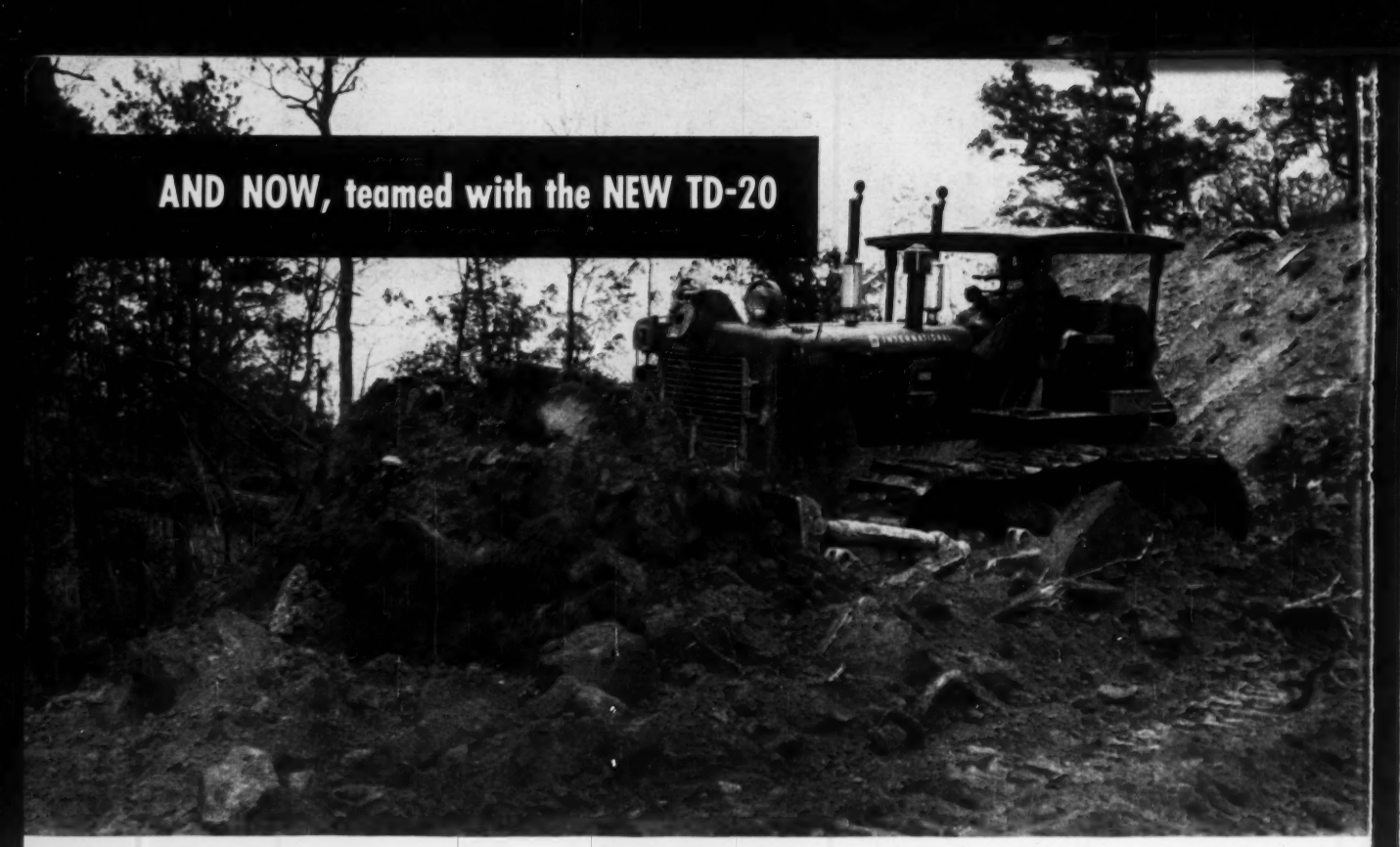


From the excavation in first or second gear with a 4-ton load of dirt, a TD-20 4-In-1 can climb and dump —and be backing down the ramp for a "refill," faster than any other big loader you ever saw work. Fast dumping and fast "Shuttle-Bar" shifting are the reasons why! For toughest digging, the new International Drott TD-20 4-In-1 gives you a tremendous 46,800 pounds of break-out force!



You can speed up the cycle remarkably — can clip minutes off every truck-load—add hundreds of cubic yards to daily loader capacity. You can do it wherever you can apply shuttle loading teamed with exclusive TD-20 "Shuttle-Bar" shifting! Note how this operator uses exclusive 4-In-1 clamshell bottom dumping—for fast action and positive clean-out of sticky materials! New full-flow hydraulic system filter protects precision hydraulic parts indefinitely.





THE MIGHTY TD-24 gives you 175 Planet-Power steered drawbar horsepower!

Now, the mighty International TD-24 becomes the most powerful gear-drive crawler in its size class—with 175 full-capacity working drawbar horsepower.

Now, you get 41,130 pounds of Planet Power-controlled pull at rated rpm. Nothing else on tracks gives you this positive load control! You get full-measure, full-time live power on both tracks — to handle the same big loads on turns as on the straight-aways.

Increased horsepower is matched by new power train strength—a widened, strengthened sprocket drive gear and pinion — for long life under tough working conditions.

Watch the TD-24 perform from the operator's seat and compare profit-production of the TD-24 to any other gear-drive, king-size crawler. See what a major part Planet Power steering has in increasing dozing, pushing, and pulling profits. See your International Construction Equipment Distributor for a new TD-20 or TD-24 demonstration!

Exclusive combination of foot decelerator for feather-touch contact—*Hi-Lo power shift* for a speed-away send-off—*high reverse* for super-fast return to the push-starting point—makes the 175 hp TD-24 unequalled as a pusher!

International®
Construction
Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Outshines them all

DIETZ Visi-flash TRADE-MARK HAZARD WARNING LIGHTS

"Brighter . . . tougher . . . low-cost . . . trouble free!" These are but a few of the enthusiastic quotes from contractors, municipal, county and state officials, utility and industrial users in commenting on new transistorized Dietz Visi-Flash Hazard Warning Lights.

- **The transistor circuit makes it shock-proof, uses minimum current, won't wear out . . . eliminates common maintenance problems.**
- **Optical lenses, longer dwell time, and "white" bulb make Visi-flash up to 40% brighter.**
- **First cost is 15% to 25% less than ordinary flashers.**

DIETZ LANTERNS The only complete line of construction warning lanterns. Six different models from which to choose, each designed for a specific job. Send coupon for catalog.

DIETZ TORCHES

Four types available. Sturdy, bright, reliable, longer burning. Leaktight, 20 gauge steel construction. Flat-bottom or weighted-bottom styles. Send coupon for catalog.

In actual field tests, made at 800 and 2,000 yards, Dietz Visi-flash proved the brightest, and most visible in all types of weather.

No wonder everyone is saying: "This is the hazard warning flasher we've been waiting for!"

You'll be saying the same thing when you use Dietz Visi-flash Hazard Warning Lights. 4 styles available. See your Dietz distributor, or use coupon for free catalog. Mail to R. E. DIETZ COMPANY, SYRACUSE, N. Y.

Go **DIETZ** *and you go Safely*

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Please send me catalog and price list.

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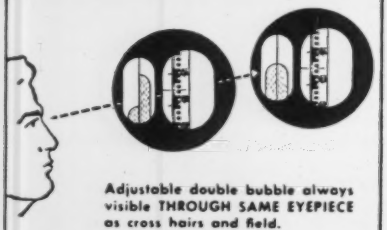

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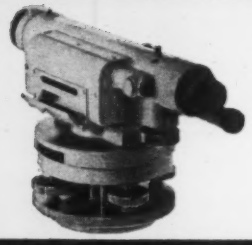
DOUBLE BUBBLE



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☐ Other levels ☐ Collimators
☐ Transits ☐ Stands
☐ Combinations ☐ Tripods
☐ Theodolites ☐ Repair of present instruments, (any make)

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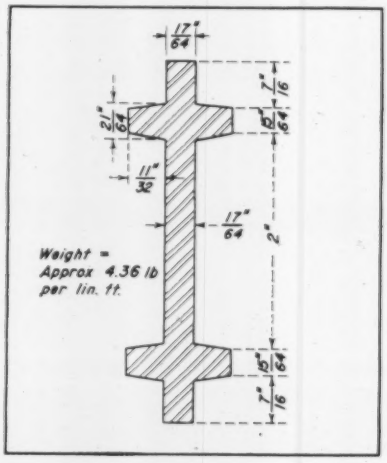


Odd Floor Slab

SIR—During demolition of the old Stanislaus County Court House in Modesto, Calif., we demolished an odd floor slab. Nobody in this area seems to be able to give us a satisfactory answer as to the origin of this peculiar type of construction.

The original court house was constructed in 1872, and an addition was constructed in 1904, or thereabouts. The slab, as detailed, was used in the newer (1904) portion of the building.

We are unable to locate a set of the original plans, either for the original portion or the addition; so we only go on what the demolition contractor uncovered as he went along.

The clear span of the slab was 13 ft and the reinforcing, of an unusual shape (see cross section), was on 30 in. centers. Slab depth, roughly, was 6 in. with a 1½ in. mortar topping on the wearing side of the slab.

It is self-evident that such a slab system would not pass code requirements today, and its slight factor of safety was very evident when they dropped the "headache ball" on it. Two blows near the center of one span took out a section some 20 ft long.

We have saved a short length of the steel shape for posterity.

I. N. "JACK" BROTHERTON
Engineering Aide II
Stanislaus County Surveyor's Office
Modesto, California

No Prestressing Failures

SIR—I shall try to answer the questions raised by Mr. Bilderbeck on the collapse of the Orlando School roof, a prestressed concrete structure (ENR Jan. 16, 1958, p. 11).

Our engineers have specialized in prestressed concrete since 1937. We have designed and built five prestressed concrete buildings in Europe, three in the Western Hemisphere, and at present we are designing one plant for the United States. Our experience encompasses construction of more than 6 million square meters of prestressed structures without one single failure in the most varied applications.

Some of these structures are more than 15 years old, but no defects have appeared. On the contrary, results are far better than could be obtained with ordinary concrete.

One of the jobs we've done is an oven (for baking bread) in which the floor and ceiling are made of prestressed blocks. The temperature in these ovens varies from 10C or 15C to 400C—a variation that occurs almost daily. Yet we haven't found anything structurally wrong with it in a period of 10 years.

The failure at Orlando does not logically prove any conclusions on prestressed concrete; it only proves what happened in one isolated instance.

D. FRANCISCO FERNANDEZ CONDE
Pacadar Sociedad Anonima
Calle de Castello 48
Madrid, Spain

Matching Rocketry Costs

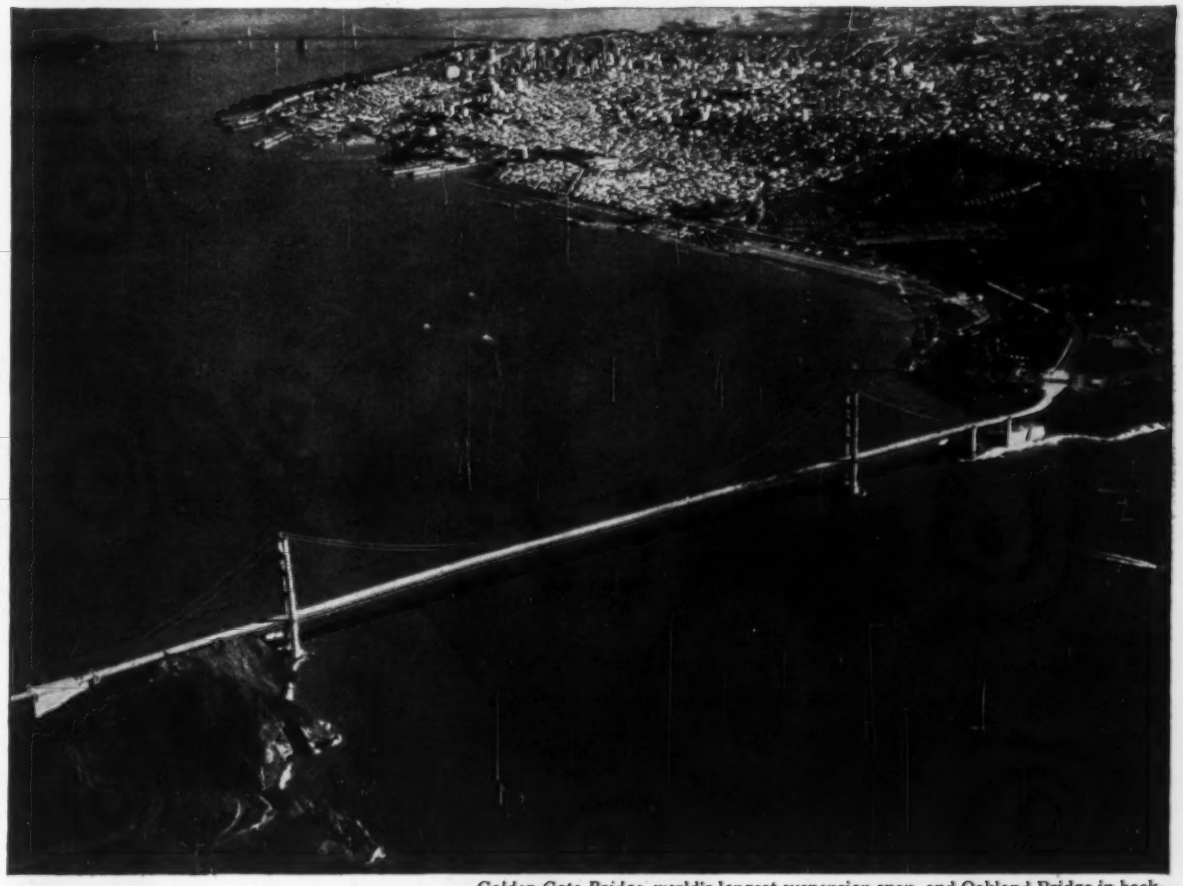
SIR—To many Americans, the race to the moon is a sickening and costly spectacle. Obviously, it is not done in the name of Science. But we are in it now and have to keep it up no matter what the costs.

Each billion spent on rocketry should be matched with $10 million for a really worthwhile purpose.

Countless naked hills and plains in our country await reforestation. We badly need an American-made forest from coast to coast. We need this forest for more oxygen to combat the accumulation of carbon dioxide (from autos, planes, rockets, industry, etc.). We need more forests for recreation in a world of speed and tension. We need more forests to protect our soil against the onslaught of the elements

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 300 W. 42nd St., New York 36, N. Y.

look ahead with LEAD



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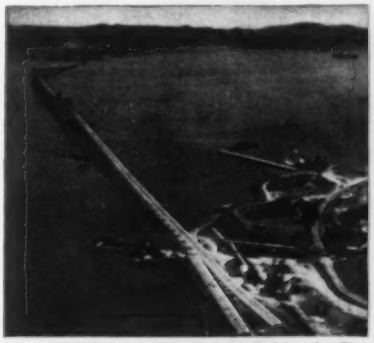

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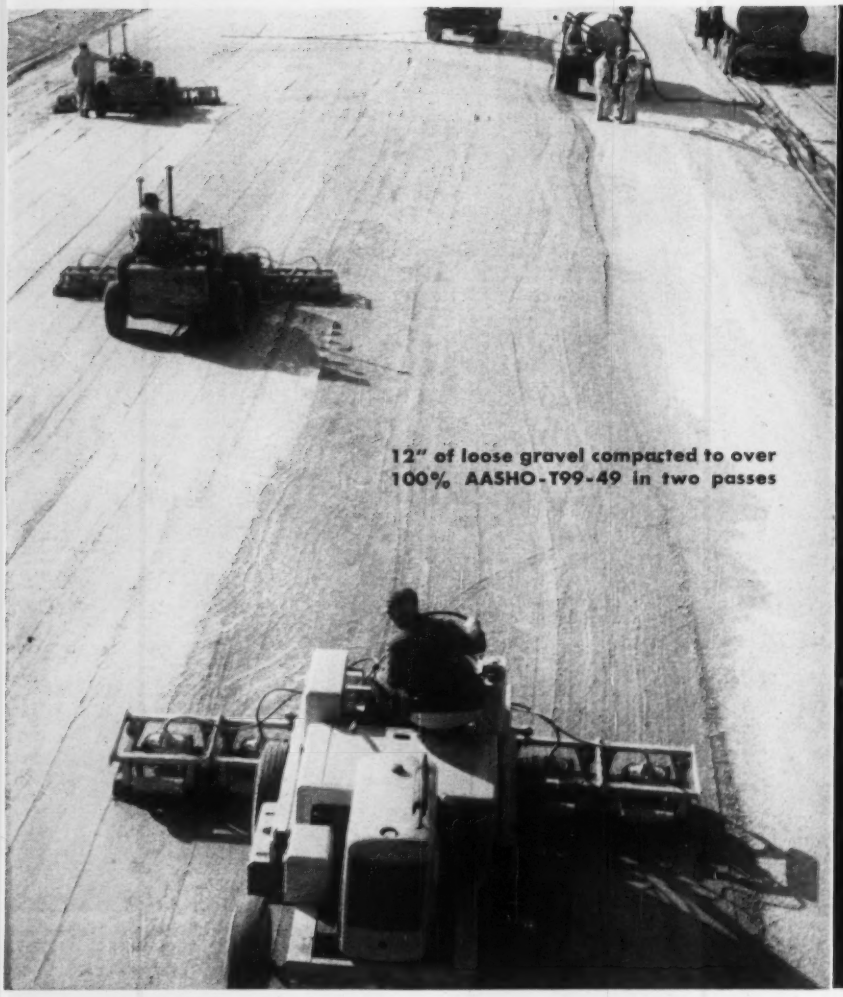

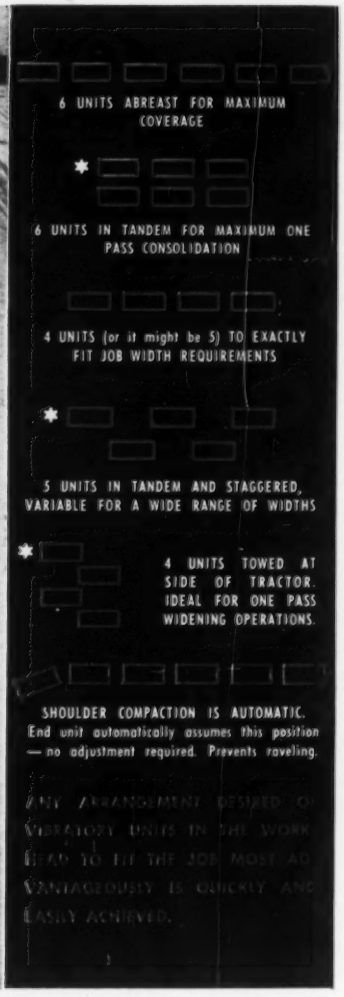
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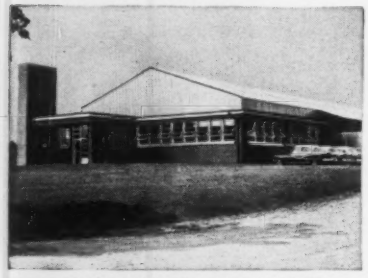

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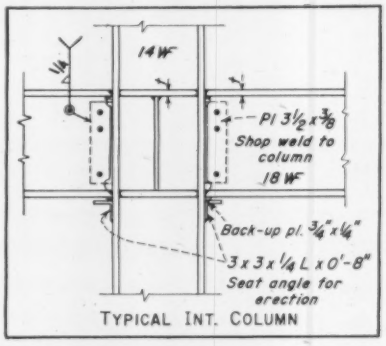
(rain, floods, dust storms, tornados, hurricanes, etc.). We also need plenty of wood to keep our lumber mills humming.

Thus, our nation would engage in a major peaceful project and a truly long-range capital investment we cannot afford to miss. Instead of helplessly witnessing the waste of hard-earned tax dollars, Americans would see them coming home to roost.

Let future historians decide which of the two projects—the moon race or the coast-to-coast forest—are of greater value to the nation and the world. The initial cost of the forest program would be only 1% of the billion-dollar missile program.

I am very much in favor of improving and beautifying our planet before attempting to cruise into the unknown universe.

FRANK D. STEINER
Moraga, California



TYPICAL INT. COLUMN

Multistory Welding

SIR—A. W. Finne's letter (ENR Jan. 2, 1958, p. 12) asked for suggestions relative to the merits of two different types of welded connections for multistory buildings.

Here is a sketch of a modified version of the type B connection, in common use in our area, that we think is not only a good connection structurally but offers a number of advantages for erection.

• The web plate shown permits easy packing out at all connections to overcome normal shrinkage from welding.

• This web plate permits a more flexible arrangement for plumbing the steel and, at the same time, when fit up and tack welded, it provides the temporary rigidity in advance of finish welding necessary to resist the action and stresses of the derrick and helps maintain plumb and alignment.

• Field welding is reduced to the essential minimum, since quantity of welding is governed by size of flange of the parent metal.

• By welding the top flange directly to the column and eliminating the top plate it offers no interference with any of the metal decks and saves much of the costly cutting and fitting of the deck.

• Another significant advantage of the web plate for temporary fitting is that it permits the primary beam to be laid out from the top and assures constant and uniform elevation of all floor members. However, if it is fitted to a seat angle—as shown in the type B connection—all tolerances, under or over runs, will be reflected in beam top flange elevation and result in an uneven floor.

HOMER R. PETERSON
Peterson Brothers Steel Erection Co.
Houston, Texas

Karadj Dam in Iran

SIR—To complete the interesting facts given on the Karadj Dam (ENR Dec. 19, 1957, p. 56), let us mention that the project originally was designed by our firm under a contract signed in 1949 by the Iranian government. Later, when financial arrangements made it compulsory to bring in a U. S. engineering firm, our firm was only too happy to cooperate with Harza Engineering Co. International of Chicago.

G. R. THALHEIMER
Compagnie Francaise D' Entreprises
Paris, France

Lost Line Found

SIR—May I call attention to a proofreading error in my letter on the "Dutch Linked Tunnel" (ENR Feb. 20, p. 8). In the fourth from last paragraph on p. 10, a complete line was omitted from the second sentence.

This sentence should read: "In our studies, we proposed to place a structural concrete lining inside the prestressed shell, in the same manner as with a steel-plate shell."

H. ALDEN FOSTER
Parsons, Brinckerhoff, Hall & Macdonald
New York, N. Y.

CALENDAR

All-Industry Conference on Control, American Society of Heating and Air-Conditioning Engineers Research Laboratory, Cleveland, Ohio, May 14, 1958.

National Society of Professional Engineers, annual meeting, Chase-Park Plaza Hotels, St. Louis, Mo., June 11-14.

American Society of Heating and Air Conditioning Engineers, semi-annual meeting, Pick-Nicollet Hotel, Minneapolis, Minn., June 23-25.

American Society of Civil Engineers, Multnomah Hotel, Portland, Ore., June 23-27.

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- ☐ H-11 Red

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Designed for what pressure or backload we please,
The pipe we are proud to OK.

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And backfilled the very same day.

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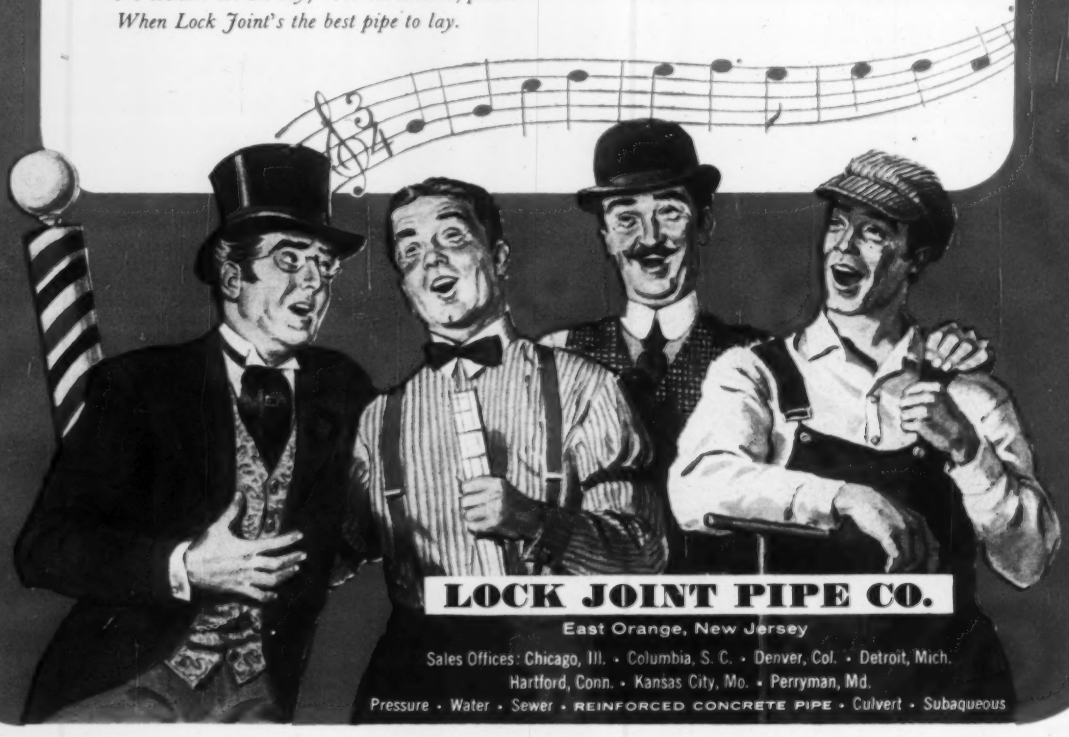

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

TWO-TIME WINNER—New York City's $205 million Lincoln Square redevelopment project won a second round in court last week. The Court of Appeals at Albany, the state's highest court, ruled that neither the state nor federal constitutions had been violated when the land was resold to Fordham University at a price less than what the city had paid to acquire it. Opponents argued that the resale to a Roman Catholic institution involved a subsidy and therefore was a violation of the constitutional guarantees of the separation of church and state (ENR Jan. 9, p. 102). The way now is apparently cleared for an early start on the three year job of relocation of 5,000 families and business tenants, although a spokesman for opponents said the latest decision will be appealed to the U. S. Supreme Court.

$75 MILLION OF AUSTRALIAN CONTRACTS—Two U. S. joint ventures and an Australian contractor have been awarded $75 million worth of work in three contracts on Australia's mammoth Snowy Mountains scheme. Details of each award were not disclosed, reportedly because lower Japanese bids were rejected on political grounds. Kaiser-Perini Morrison-Raymond, holder of much current Snowy Mountains work, will build a 3 mile tunnel and an underground power station. Utah-Brown & Root has a concrete dam and 10 mile diversion tunnel. Theiss Brothers, Queensland, Australia, was awarded an earthfill dam and a 10 mile diversion tunnel.

LAKE-FRONT HALL GETS LEGAL PUSH—A circuit court judge last week upheld a 40 year lease on the site of a $29 million convention hall proposed for Chicago's lake front. The court also said the decision to buy $25 million of financing bonds or not rests with the state. But the project is not yet on the rails. An appeal to the Illinois Supreme Court is likely, and the state has said it won't buy bonds until all legal issues are settled. The state so far is the only customer (ENR May 1, p. 79). Private investors wouldn't bite when the bonds were offered earlier. Sponsor is the Metropolitan Fair and Exposition Authority.

WANTED: METAL-BUILDING DESIGNS—The U. S. Air Force is in a hurry to get standardized designs for steel-framed metal-covered buildings from manufacturers and fabricators. By the end of next year, it expects to have the U. S. Army Corps of Engineers—acting as the Air Force's construction agent—build 63 of the structures 50 and 60 ft wide and from 60 to 180 ft long in this country. The Corps of Engineers' New England Division in Boston is handling the project.

8 more jobs prove Foster Pipe Piles

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A. S. Wilkstrom Inc., Skaneateles, N.Y.

Florida Power and Light Co. Plant
Murphy Construction, Palm Beach

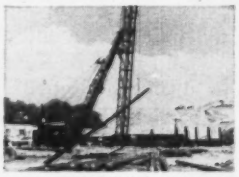
New York Thruway Connecting Link
Carlo Bianchi & Co. Inc., Framingham

Jersey City Sewage Treatment Plant
Garden State Constructors & Assoc.

Brazos River Bridge, Hearne, Tex.
J. A. Raines Construction Co., Okla.

Mississippi River Bridge, Lansing, Ia.
Brennan Brothers, LaCrosse, Wis.

Connecticut Turnpike Feeder
C.W. Blakeslee & Sons Inc., New Haven



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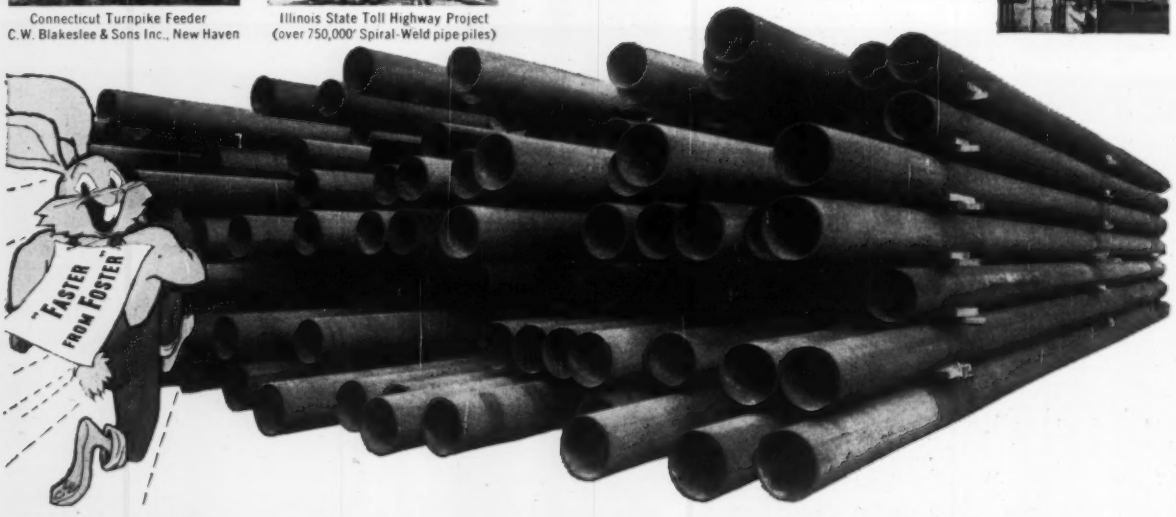

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WASHINGTON OBSERVER

- Tallamy seeks tough billboard rules
- Military construction to stay high next year
- Congress hoots at New York A-bomb shelter
- Columbia Basin report on time

New billboard rules for the interstate system will be really tough, if Highway Administrator Tallamy has his way. This became clear last week when a newspaper account of Mr. Tallamy's ideas became the hottest corridor conversation at a meeting of state highway officials in Chicago (see p. 22).

Billboard regulation never was discussed officially at the meeting. Bertram Tallamy instead asked the highway officials to name a committee to confer with him in preparing regulations to recommend to Secretary of Commerce Weeks. Secretary Weeks will promulgate the regulations based on the new highway law's general language on billboards.

The Tallamy proposal is to write tough rules that will still be acceptable to states in exchange for the additional highway money offered as bait.

Here's the gist of his ideas on the subject:

No private sign would be permitted within two miles of the outer limits of an interchange. Signs in this area would be limited to official highway signs erected for the motorists. Prior to and following this restricted area, the rules would permit signs in a two mile strip of the 660 ft regulated area on either side of right-of-way boundaries. The number of signs in this permitted area would be severely limited; only businesses within 12 highway miles of the interchange would have the right to erect a sign.

Such restrictions, if approved, would apply only to rural mileage.

Military construction spending will stay around $2 billion for the year beginning July 1. That seems assured by the Administration's request to Congress last week to authorize some $1.7 billion of new projects. Of this $1.3 billion would be in the United States.

Contract awards also will total about $2 billion for the year ahead—something higher than contract awards this year. Official estimates of contract awards for fiscal 1958 will not be reached, because of the impact of the big budget-cutting furor that began early last year.

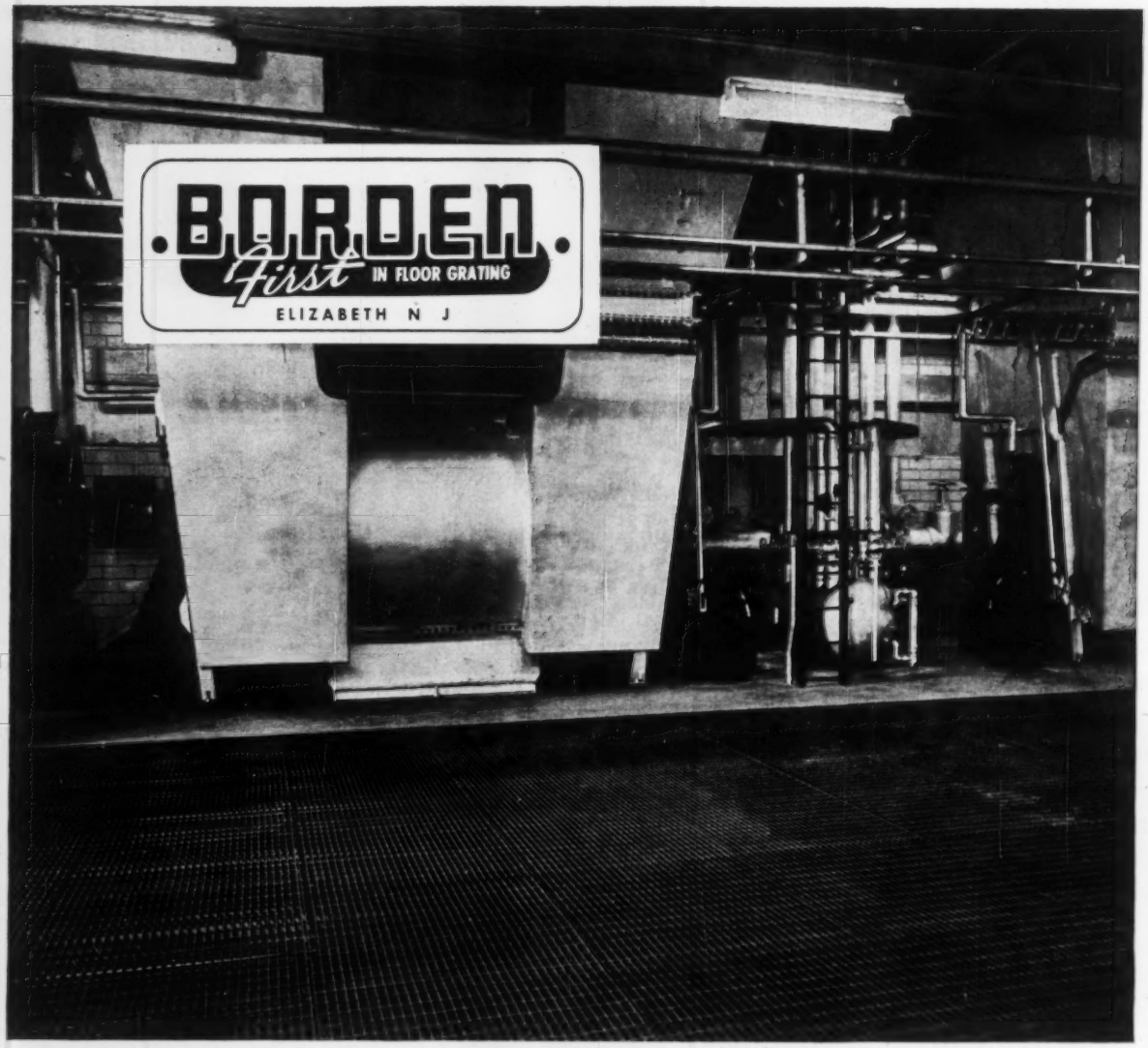
It would cost $2.5 billion to provide an atomic shelter under Manhattan Island big enough to hold for 90 days the 4.5 million people there on a weekday. That's what federal civil defense authorities learned from a study made by Guy B. Panero's engineering firm.

Congressmen of the House Government Operations Committee criticized Civil Defense for having the study made. But agency officials said they learned a lot about the possibilities of deep rock shelters under America's major cities.

Critics contend that the publicity will discredit what they claim is a real need for shelters to protect us against bombs and fallout.

The Corps of Engineers is on time with its report bringing up-to-date their monumental survey of the Columbia Basin made some 10 years ago.

It will wrap up for Congress the latest information on water storage potential—which could in turn support demands for all kinds of public works, including power, flood control, navigation, irrigation, and recreation.



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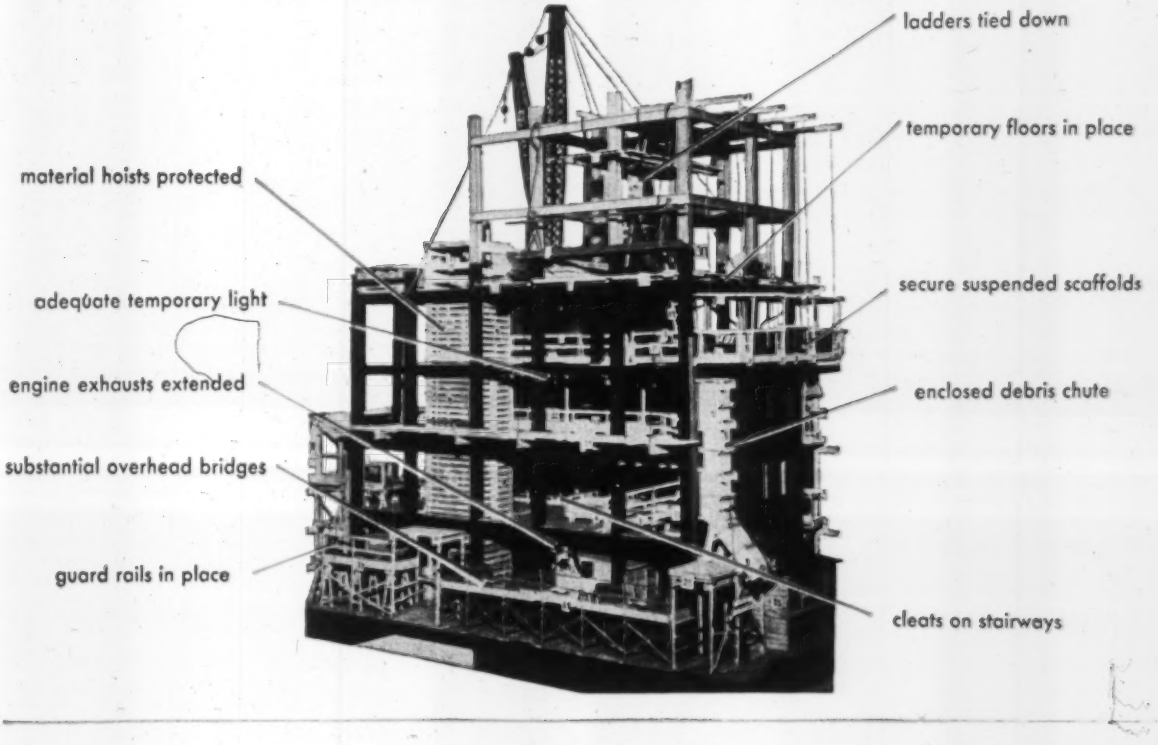
Safety in construction—

Popular model spotlighting safety practices for the entire building industry helped promote one builder's recent annual safety conference.



Model Steals Show at Safety Conference

A good-looking model will turn a man's head. A model showing safe construction practices did just that recently at the headquarters of a New York construction company. This was a model of a building under construction on display for the firm's annual safety conference.

During the last few months, the model, built for the New York State Division of Industrial Safety Services, has aided both builder and labor groups in emphasizing construction safety. It contains many safety items in the state's Labor Law and Industrial Code Rule No. 23 on construction safety.

The model is only one part of the division's reorganized program in the drive to reduce construction accidents.

Loaned to the Turner Construction Co. for its annual conference in New York City, the model turned out to be important in publicizing the meeting and the main points of the conference.

Turner's safety program isn't new. As far back as 1927, an issue of the company's construction bulletin listed in detail the safety precautions that superintendents should follow on their jobs. The safety program was put on a formal basis in 1951. Yearly conferences have been held in each branch since 1956.

Fred M. Livingston, Turner's safety director, says: "Our objective is to stop injuries to our men and prevent material and construction from being destroyed. The aim is one of education to keep our safety program continuously in the minds of our superintendents and foreman. Sporadic enforcing campaigns aren't the way to do it."

The New York meeting, held in late April, was attended by 35 field superintendents. They heard addresses by Henry C. Turner, Jr., president of the company, and H. B. O'Connell, vice president in charge of operations in the New York area, in a conference moderated by N. L. Doe, vice president and head of the firm's safety committee.

• **Meeting key**—Subjects that received special attention at the meeting were job housekeeping, materials handling, methods for reducing falls, ways of eliminating falling objects, and wearing of hard hats. The part that the construction model played was an important one. It gave visual impact to many of the points made at the meeting and called attention to safety in general while on exhibition at the company.

• **How it started**—The model normally is housed in the Office of the Division of Industrial Safety Service in downtown New York. It had been built by Eugene Pape, a division inspector and former pattern maker, at home in his spare time over a period of two years. To make it realistic he based it on plans for one of the Alfred E. Smith apartment buildings in Manhattan.

The model contains carefully scaled example of about 100 safe construction

features mentioned in the Labor Law and Industrial Code No. 23. This code prescribes safety practices to be followed for every type of building construction in New York State.

The model's origin was twofold. Mr. Pape wanted to contribute something to simplify the department's work. At the same time, an opportunity developed to improve the division's training program. Carl J. Mattei, acting director of the division and S. Samuel Martinson, chief inspector, who gave Mr. Pape technical assistance on the model, began the program as part of a new state-wide program.

A cash award of $1,000 by the Merit Award Board to the makers, Mr. Pape, testifies to how successful the state feels the model has been in its training work.

• **Persuasive**—Since it was built, the model's effect on the safety movement has been spectacular. Building contractors and labor groups on many occasions have used the model to get across safety principles to workers. Employees who previously were unable or unwilling to follow written rules or oral instructions have been able to adapt safety measures shown on the model to their own jobs.

Getting to the employees as well as management is an important part of the division's program, says Mr. Mattei. "As a job is built, our inspectors can only make occasional checks, even on a daily basis. A violation may occur and be removed just in the course of the job's activity. No accident may happen, but while the violation exists, there's exposure to a hazard. The code can only be truly effective if we can train foremen and workers to recognize and avoid violations. This model has let us do just that."

The state reorganization was sparked by First Deputy Commissioner Charles W. Halloran of the Industrial Safety Service Division. Formerly Fire Commissioner of Buffalo and a past president of the Buffalo Federation of Labor, he came to the state with an impressive safety background on both the labor and management sides of industrial building.

• **New approach**—The safety division has had its new program in effect since last June. Previously, safety regulations were enforced at the job site only during construction. The new system starts long before that stage.

Now, the department gets word of a job as soon as plans are filed and contacts the contractor. Sitting down with the builder in the planning stage allows the department to recommend how safety can be incorporated in advance in the construction process.

The process goes beyond the minimum requirements of the law and code. Instead of working as policemen, the department's inspectors fill the role of consultant. "Tool box meetings" at the job with foremen and workers are aimed at education instead of enforcement.

• **School, too**—This matter of education is of such importance to the department that Mr. Mattei and Mr. Martinson set up a four week course given to the entire inspecting staff last year at the Cornell University School of Industrial Relations. Mr. Mattei described the course succinctly as emphasizing salesmanship and human relations.

As part of the new safety program, the department is setting up management-labor committees in each of the seven administrative areas of the state to aid the new safety drive. At present, these committees are working in the Buffalo and Rochester areas. The other areas, metropolitan New York, Albany, Binghamton, Utica and Syracuse, are scheduled to be organized as the program develops.

Made up of building industry councils and trade union representatives, these committees are called in to help at jobs where high accident rates and substandard safety conditions need correction. The system is a success for a number of reasons. First, it lets the contractors and trades police themselves. Secondly, it allows solutions to problems that the divison might miss. Often the division will make a suggestion and the contractor or union will have an alternative that gets the same result in terms of safety without added cost.

• **Trouble shooting**—An example from a recent division contractor-union meeting on a single New York City job illustrates this point.

The job in question has glass curtain walls. The vertical mullions supporting the glass panels run from floor to floor and are connected to each other just below floor level. The miscellaneous ironworkers doing the work had to lean far out over the edge of the floor and reach below it to make the necessary connection.

The division felt that this was a definite hazard. It ordered a system of securing the men with cables at the working floor and placing plank outside the building to prevent injury from falling material. The union objected to this on the basis that it would make costs too high. The contractor came up with the compromise in this case. Mullion connections were made from the floor below on rolling metal scaffolds. The men no longer had to risk falling or injury from debris from above, and the scaffold system turned out to cut the cost for the contractor below his original budget.

How to Spend Faster

$400 million emergency highway funds sure to be spent under job-grouping

None of the $400 million of emergency road construction money allotted to the states for their primary and secondary federal-aid highways will go unspent. That was assured last week when state highway officials latched onto a plan for state-wide emergency programming, as Bureau of Public Roads officials presented the idea to a closed meeting in Chicago.

Up to last week, none of the states had a plan that would assure full utilization of state allocations from the $400 million special fund, apportioned to the highway departments April 17. All the departments had been proceeding in the traditional way to obtain approval of the U. S. Bureau of Public Roads project-by-project for the extra highway construction work that will receive two dollars of federal money for each dollar of state funds expended.

• **The problem**—The catch in this procedure is that the two-to-one emergency dollars have a fixed time limit attached to them. They must be under construction contract by December 1 of this year on jobs that call for completion by December 1 of next year.

This fast-spending requirement makes an emergency program necessary, and quite different from normal allocations that are available to the states for three full fiscal years. If emergency funds were committed under BPR-approved project agreements on a job-by-job basis, any savings obtained through underruns in actual construction of any projects would have to go back to the federal Treasury. In the same way, any overruns would have to be paid for by the state with regular 50-50 matching funds for the ABC roads.

• **The solution**—To avoid this contingency, federal highway officials suggested that each state lump its emergency ABC construction projects in a single state-wide program. Under this plan, a state can use the savings gained on some projects to pay the cost of overruns on other projects. In addition, a highway department can drop a couple of added projects into its state-wide pool, just to make sure that none of the savings are lost. If savings gained through underruns on other projects do not pay in full for the additional jobs, the highway department can make up the difference with regular 50-50 matching funds.

• **Helped by fast OK's**—Every project in the state-wide pool, of course, has to

be separately approved and signed by BPR in a project agreement. But neither the agreement nor the plans, specifications and estimates on which it is based have to be submitted to the Washington headquarters of BPR. The BPR division engineer stationed in the home city of the state highway department has full authority to work out all project features with department officials and to sign the binding agreement.

All BPR functions respecting emergency projects are being speeded up, Federal Highway Administrator Bertram F. Tallamy told the state officials at the special AASHO meeting in Chicago. It was the expressed intent of Congress, he emphasized to officials and highway engineers in attendance from all the states, that both the federal agency and the states accelerate their ABC operations to swell the volume of highway contract awards this year and assure a substantial increase in construction over the next 18 months.

• **Speed is essential**—For its part, Mr. Tallamy said, BPR is even now working on changes in regulations that will further simplify review requirements and procedures for ABC emergency projects. The object, of course, is to ease and speed up the work that the BPR division engineer in each state must do before he can sign a project agreement.

Speed is essential, as the time schedule plainly shows. Project agreements for all the emergency projects must be signed in ample time to permit advertising and award of all contracts within the next 180 calendar days.

A number of states, such as Oklahoma, are speeding their emergency programs by pulling out completed plans and specifications for ABC projects that originally had been programmed for future construction. Department estimators then quickly estimate these jobs on the basis of unit bid prices received in recent months, as tabulated and averaged in any way desired by punched card machines.

• **Work must be varied**—One state, however, heard at Chicago that its plan for fast emergency construction does not conform with the intent of Congress. This highway department was going to concentrate its emergency money on resurfacing of deteriorated ABC pavements in the state. Department officials learned that Congress wanted diversity of highway construction activities as well as speed. Only by widening the bridges and pavement on its old 18 and 20 ft highways, in addition to resurfacing them, would its single-purpose plan satisfy the Congressional intent that as many branches as possible of the construction industry be employed in the accelerated program.

Competition Up: Low Bids Down

Figures just released by the U. S. Bureau of Public Roads present the statistical picture of what most contractors already well know—that competition for federal-aid road jobs stiffened considerably in 1957. The number of bidders for federal-aid roads, excluding secondary roads, increased during the year and low bids dropped below the engineer estimate by wider margins.

Increased competition started in the first half of 1957 and was further tightened in the second half, which saw another factor introduced—a sharp decline in all highway and bridge contract awards (see chart next page). They dropped from a peak quarterly rate of $1,013 million in the third quarter of 1957 to only $845 million in the last quarter, as reported by ENR. And the decline continued into the first three months of 1958.

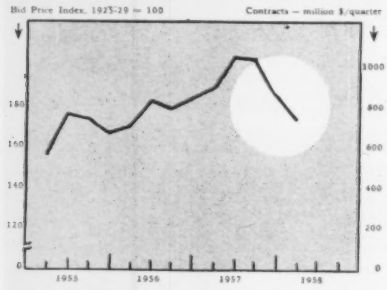
In 1956, the average number of bids for a contract was 5.8 while low bids averaged 3.7% below engineer estimate.

In the first half of 1957, the average number of bidders rose to 6.5 and bids ran 7.3% under estimates. For the sec-

How Road Bids Ran Below Engineer Estimates for 1957

Primary federal-aid roads, including interstate, excluding secondary

	Jan.-June			July-Dec.			Full Year		
		Low bid compared to estimate			Low bid compared to estimate			Low bid compared to estimate	
	Bids per contract	% under	% over	Bids per contract	% under	% over	Bids per contract	% under	% over
ALABAMA	10.0	9.4	....	12.1	7.1	....	10.8	8.4	....
ARIZONA	8.5	....	5.9	9.5	7.3	....	9.0	1.5	....
ARKANSAS	7.9	1.0	....	9.7	9.1	....	8.8	5.4	....
CALIFORNIA	6.4	4.2	....	8.8	9.1	....	7.1	5.8	....
COLORADO	8.8	....	0.3	8.6	6.1	....	8.7	3.3	....
CONNECTICUT	6.5	4.4	....	8.2	3.9	....	7.0	4.3	....
DELAWARE	5.8	9.6	....	8.2	24.4	....	7.0	16.4	....
FLORIDA	5.6	10.6	....	7.6	6.1	....	6.4	8.8	....
GEORGIA	5.4	8.0	....	7.7	11.0	....	6.7	9.9	....
IDAHO	5.9	6.6	....	7.3	15.9	....	6.8	12.6	....
ILLINOIS	4.4	4.0	....	4.3	6.5	....	4.4	5.4	....
INDIANA	4.2	12.3	....	4.6	16.1	....	4.5	15.2	....
IOWA	6.6	5.2	....	4.7	5.6	....	5.9	5.3	....
KANSAS	5.5	9.5	....	5.5	7.3	....	5.5	8.2	....
KENTUCKY	4.6	9.6	....	4.5	5.9	....	4.5	6.6	....
LOUISIANA	4.0	5.6	....	3.8	3.8	....	3.9	4.7	....
MAINE	4.5	....	2.4	5.4	16.2	....	5.1	10.3	....
MARYLAND	4.8	4.6	....	7.7	1.1	....	6.5	2.7	....
MASSACHUSETTS	8.4	6.2	....	11.7	15.5	....	10.6	10.3	....
MICHIGAN	5.7	5.8	....	7.6	6.4	....	6.5	6.1	....
MINNESOTA	8.9	6.3	....	8.0	9.5	....	8.6	7.2	....
MISSISSIPPI	10.5	10.9	....	10.5	14.5	....	10.5	12.4	....
MISSOURI	5.5	4.8	....	6.0	11.6	....	5.8	6.6	....
MONTANA	9.9	13.3	....	11.1	14.9	....	10.5	14.2	....
NEBRASKA	6.6	10.9	....	6.2	13.1	....	6.3	12.1	....
NEVADA	4.2	4.2	....	5.3	11.4	....	4.6	7.7	....
NEW HAMPSHIRE	5.8	9.5	....	7.5	11.5	....	6.7	10.8	....
NEW JERSEY	7.2	12.5	....	4.8	10.8	....	5.8	11.6	....
NEW MEXICO	6.7	17.7	....	6.1	9.7	....	6.4	14.6	....
NEW YORK	3.9	10.6	....	5.0	13.8	....	4.4	12.1	....
NORTH CAROLINA	7.7	8.5	....	9.4	5.1	....	8.3	7.2	....
NORTH DAKOTA	10.7	10.3	....	11.2	19.8	....	10.8	13.6	....
OHIO	5.8	14.6	....	7.6	10.8	....	7.2	11.7	....
OKLAHOMA	6.0	5.7	....	6.7	6.4	....	6.4	6.1	....
OREGON	7.1	4.8	....	10.5	13.4	....	9.2	10.7	....
PENNSYLVANIA	5.0	6.1	....	8.4	7.7	....	6.1	6.6	....
RHODE ISLAND	4.8	9.4	....	4.8	18.1	....	4.8	12.0	....
SOUTH CAROLINA	6.4	2.9	....	6.5	3.8	....	6.4	3.4	....
SOUTH DAKOTA	10.3	13.3	....	7.8	7.6	....	9.4	10.4	....
TENNESSEE	11.0	10.8	....	7.4	....	2.3	9.0	2.0	....
TEXAS	7.4	4.1	....	7.3	4.0	....	7.4	4.1	....
UTAH	5.8	1.1	....	6.9	12.4	....	6.2	6.2	....
VERMONT	7.0	3.6	....	8.0	10.1	....	7.6	6.6	....
VIRGINIA	3.5	12.4	....	5.9	20.6	....	5.0	18.7	....
WASHINGTON	6.0	8.4	....	10.5	16.1	....	8.3	12.2	....
WEST VIRGINIA	6.5	3.5	....	5.7	9.5	....	5.9	7.9	....
WISCONSIN	7.9	10.8	....	10.1	11.2	....	9.4	11.1	....
WYOMING	10.3	5.7	....	9.5	21.8	....	10.0	13.2	....
DIST. OF COL	7.0	4.4	....	6.7	12.4	....	6.9	8.2	....
HAWAII	6.0	....	9.5	3.7	0.1	....	4.0	....	2.3
PUERTO RICO	....	....	....	4.0	10.5	....	4.0	10.5	....
TOTAL	**6.5**	**7.3**	....	**7.0**	**9.9**	....	**6.7**	**8.6**	....



SHARP DROP in all bridge and highway contract awards in second half of 1957 proved a factor in increased competition.

ond half of the year, there were 7.0 contractors bidding for jobs at prices 9.9% less than engineering estimates.

This lifted the average for 1957 to 6.7 bidders per contract with low bid averaging 8.6% below engineer estimate.

The number of bid openings in 1957 reported by BPR totaled 3,335 for which there were 22,489 bidders. Low bids for these contracts ran to $1,969,354,278, which was $185,084,192 below the engineer estimate of $2,154,438,470.

The first quarter of the year 1958 saw no lessening in competition among highway contractors, as the decline in highway and bridge contract awards continued and fell to $721 million. This was the lowest quarter since the first quarter of 1955—before the interstate highway program got under way. However, record plans for awarding state highway jobs in 1958 are now beginning to build up the list of bid openings. This should ease the competitive situation a bit and could mark the end of the slide in highway prices.

LeTourneau Action

Suit could delay re-entry to machinery manufacture

LeTourneau-Westinghouse Co., Peoria, Ill., has filed suit against R. G. LeTourneau, Inc., Longview, Tex., and its president, Robert G. LeTourneau that in effect could block both defendants from re-entering the earthmoving equipment business for two years. The Texas firm has until June 26 to file response.

When the LeTourneau business was sold May 1, 1953 it was agreed that the corporation would not construct earthmoving equipment for five years. That period expired last week (ENR May 1, p. 80).

LeTourneau-Westinghouse, wholly-owned subsidiary of Westinghouse Air Brake Co., Pittsburgh, in the suit filed in Federal Court at Tyler, charged that contrary to the contract at the time of sale, Mr. LeTourneau intends to continue as chief executive officer of the LeTourneau Corp. after its re-entry into the earthmoving equipment business. In addition, some of the earthmoving machinery to be manufactured by the corporation will use inventions or components covered in the sales contract and that Mr. LeTourneau has developed ideas, drawings, inventions and plans useful in connection with the manufacture of earthmoving equipment which have not been submitted to LeTourneau-Westinghouse, but instead to LeTourneau Corp.

• **Wants his work**—The suit asks that Mr. LeTourneau be ordered to turn over to LeTourneau-Westinghouse all ideas, drawings, inventions and plans useful in earthmoving machinery manufacture developed by him subsequent to April 30, 1953. Also, that all such inventions and patent rights since that time be given to LeTourneau-Westinghouse.

The Peoria firm also charged that it had employed Mr. LeTourneau and that he agreed to submit to them all ideas and information that he might develop, but the information was never forthcoming. The same agreement, according to LeTourneau-Westinghouse, also provided that Mr. LeTourneau would not consult or serve in any capacity with any earthmoving equipment firm, or allow his name, abbreviation or adaptation of his name to be used. Under terms of the contract, Mr. LeTourneau would qualify for pension or retirement benefits from LeTourneau-Westinghouse.

The suit also seeks to stop Mr. LeTourneau from serving in any capacity—including consultant, with LeTourneau Inc.—for the next two years or while he is receiving pension or retirement benefits from LeTourneau.

• **No sales**—The LeTourneau Corp. also would be blocked from selling any earthmoving equipment using inventions or components covered by patents or patent rights held by Mr. LeTourneau or his corporation prior to May 1, 1953, or acquired by LeTourneau Corp. by April 30, 1958. All ideas, drawings, inventions and plans in connection with earthmoving machinery developed by Mr. LeTourneau during the term of his employment by LeTourneau-Westinghouse also would be barred from sale.

The suit also requests that the LeTourneau Corp. execute and deliver to LeTourneau-Westinghonse a written license agreement granting it an exclusive, irrevocable and royalty-free license for earthmoving equipment under all patents, patent rights and trademarks owned or controlled on April 7, 1952 by LeTourneau Corp. or Mr. LeTourneau. In addition, all patents and patent rights acquired by both Mr. LeTourneau and his corporation between April 7, 1952 and April 30, 1958, are asked to be turned over to LeTourneau-Westinghouse.

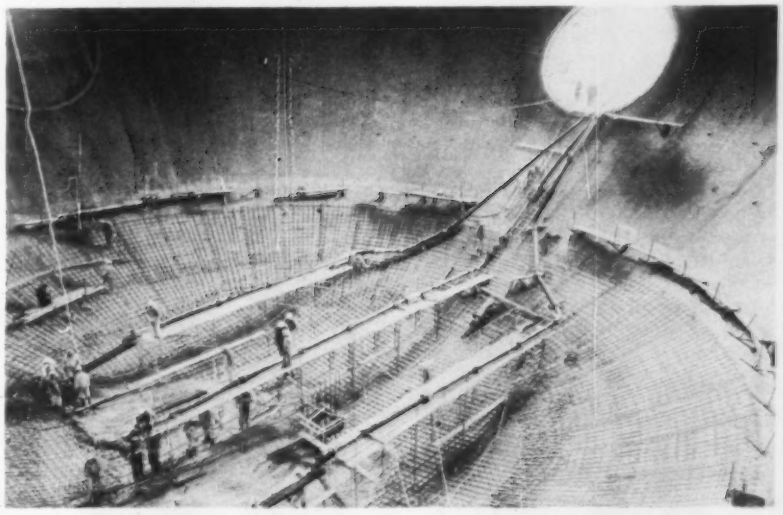
Briefs

• **Ceiling height reduced**—The legal minimum height for ceilings in Pennsylvania public school buildings has been reduced from 10½ ft to 9½ ft by the State Council of Education. "The shorter minimum height is expected to reduce school building costs from 1 to 3%," said Charles H. Boehm, superintendent of public instruction. He pointed out that in New Jersey, where the 9½ ft minimum also is in effect, one school district saved $75,000 in the construction cost of a new high school building by specifying the lower ceiling in its plans.

• **Sugar beet waste**—Sugar beet industry representatives say it is impossible to comply with the waste discharge standards recommended by the Wyoming Stream Pollution Advisory Council. The council intends to limit the biochemical oxygen demand of all wastes discharged into the state's watercourses to 8 lb per ton of beets processed. Industry claims the best it can do where wet pulp silo drainage is practiced is to reduce BOD to 12 to 15 lb per ton.

• **Ohio sewage treated**—The Ohio Water Pollution Control Board reports that in little more than five years Ohio municipalities have nearly doubled the capacity of sewage treatment facilities. When the state's new water pollution control law became effective in the fall of 1952, municipalities had a total sewage treatment capacity of 574 mgd. The capacity climbed to 1.1 bgd by end of 1957. The board said stream conditions have been improved by installation of waste treatment facilities by 493 industries, 338 of which provide "adequate" treatment.

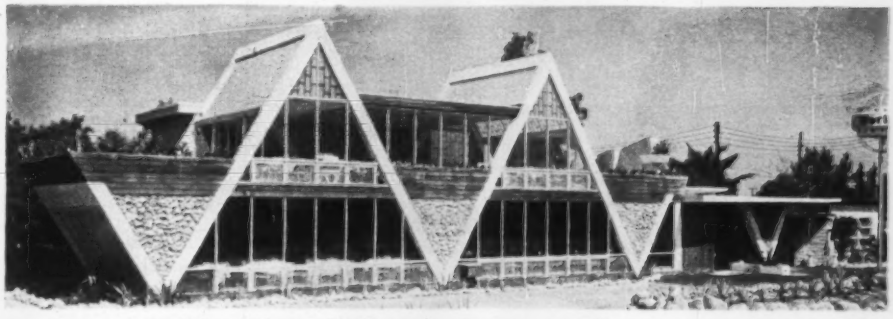
• **San Diego airport**—The Civil Aeronautics Administration in an about-face last month agreed to install a high-intensity lighting system at Lindbergh Field. Earlier, the CAA had declared Lindbergh Field obsolete for a jet age airport and had refused to provide it with additional traffic control aids. City officials hail the latest decision, saying the new facilities will enable the city to use the field as a short-haul airport until it settles on a long-haul jet airport site. The city's efforts to locate a new airport site have been hampered because of traffic interference with existnig, nearby Navy airfields.



Reactor Work Starts Inside 190 ft Sphere

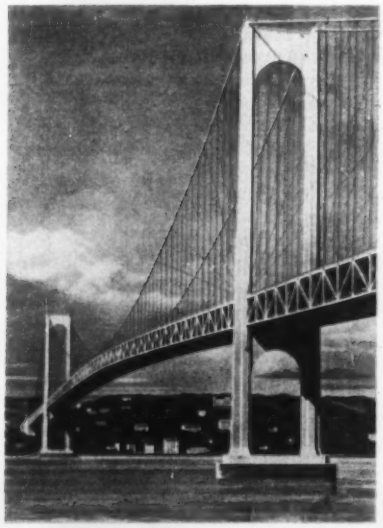
The first of more than 22,000 cu yd of concrete is being placed for the foundations and shielding of the nuclear reactor assembly at Dresden Power Station near Chicago.

Concrete is being pumped to the interior of the 190 ft dia low pressure containment vessel to support the 350 ton reactor and its high pressure containment vessel. The outer sphere was built by Chicago Bridge & Iron Co. for Commonwealth Edison Co.



V-for-Victuals Sign in Prestressed Concrete

That's one way of looking at the structural frame of the new Out of This World Restaurant in Hallandale, Fla. Its 29-ft-long prestressed concrete columns lean against one another to form angular bents. Girders of the same material run from front to back of the second floor and support prestressed T-beams. John Edwin May, Hallandale architect, designed the building. R. H. Wright, of Fort Lauderdale, manufactured and erected the prestressed concrete members.



Bridge to Link Europe and Asia

This is how D. B. Steinman, consulting engineer, New York City, visualizes the bridge now under design in his office, which the Turkish government plans to build across the Bosporus at Istanbul.

This first link between European and Asiatic Turkey will have a main span of 2,215 ft and two side spans of 861 ft. Its 58 ft wide deck will accommodate four lanes of traffic and two sidewalks. The towers will rise 432 ft above the water, and will rest on caissons sunk to rock about 168 ft below the water surface. The vertical underclearance for shipping will be 164 ft. Inclined cable stays, radiating upward from the ends of the stiffening trusses at each tower, will be used to give the structure added resistance to earthquake and aerodynamic forces.

Construction is scheduled to start this summer, with a contemplated completion date in the fall of 1961.

State Water Project

Lengthy New Jersey water hassle is near settlement

Recent approval by the New Jersey legislature of a $45 million bond issue under which the state would build two large water supply reservoirs should finally settle a long-standing, intra-state water dispute.

For many years, water-short northern New Jersey (adjacent to New York City) has been eying as a water source the Raritan River to the south in the middle of a great industrial area. However, industries in the Raritan Valley and surrounding communities were concerned with storing water on the Raritan to firm up low flows.

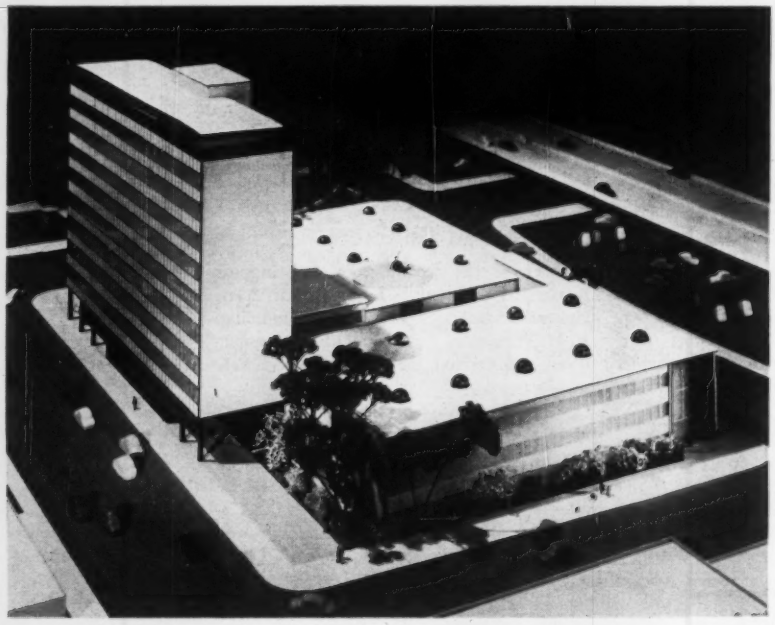
Northern New Jersey people wanted a reservoir at the Round Valley site, a high point within the Raritan watershed. Raritan water would be pumped 300 ft up to it and then flow by gravity to northern communities.

Raritan Valley interests plumped for a couple of smaller reservoirs on Raritan tributaries (ENR May 23, 1957, p. 26), and wanted the Round Valley reservoir limited to receiving water from the diverted Delaware River (requiring a 500 ft pumping lift).

Now everyone seems happy with the scheme voted by the state legislature. One of the Raritan River dams, at Spruce Run, and the Round Valley reservoir are authorized. Normal Spruce Run storage would improve conditions on the Raritan. Only flood water at Spruce Run would be diverted to Round Valley, less than 10 miles away. This short-time diversion each year will require a huge battery of pumps, about 300 mgd worth, to assure sufficient water to Round Valley so it could provide a safe yield of 70 mgd.

Only obstacle remaining to carry out the scheme is approval of the bond issue in November by the electorate. But with the legislature agreeing, voter approval is regarded as likely.

The New Jersey Conservation Department would construct and operate the project. Whitman, Requardt & Associates, Baltimore, has been engaged to prepare preliminary plans.



Courts, Cops, Clink Will Get New Building

Oakland, Calif., expects to take bids in August on a new $7 million air-conditioned Hall of Justice to house the police department, city jail and county courts. The city will foot $5 million of the bill, Alameda County the remainder. Work will start this fall.

The metal- and glass-walled structure will contain 225,000 sq ft of floor area in steel-framed nine- and six-story sections and a reinforced concrete two-story section. A heliport will top the low section.

The site will have no parking space, but 700 cars can park below an adjacent elevated freeway.

Confer & Willis, of Oakland, is the architect and Isadore Thompson, of San Francisco, the consulting engineer.

No Sewage Plant Operator, No Loan, Says FHA

A proposed 660 house subdivision in Nashville, Tenn., was turned down by the FHA for loan guarantees because a permanent agency could not be found to run the development's proposed sewage collection and treatment system. FHA specified that some sort of permanent operating system must be provided before it would okay the loans. However, J. R. Coarsey, one of the developers, said the planned sewer system could not be turned over to public agencies because no city or county department would agree to collect monthly sewer charges from the users. Setting up a trustee, such as a bank, to run the system or organizaing an association of the home owners affected, as in Florida or Texas to run similar systems, entailed too many administrative headaches, he said.

As a result a new subdivision plan has been drawn up with septic tanks installed on the individual plots. To meet local standards for such individual disposal systems the plots have been increased to ½ acre size. Only 276 plots are available as a result. Construction of homes in the $9,000 to $12,000 range is expected to start in a few weeks, Mr. Coarsey said.

Why Swim? Trucks Sought For Columbia River Fish

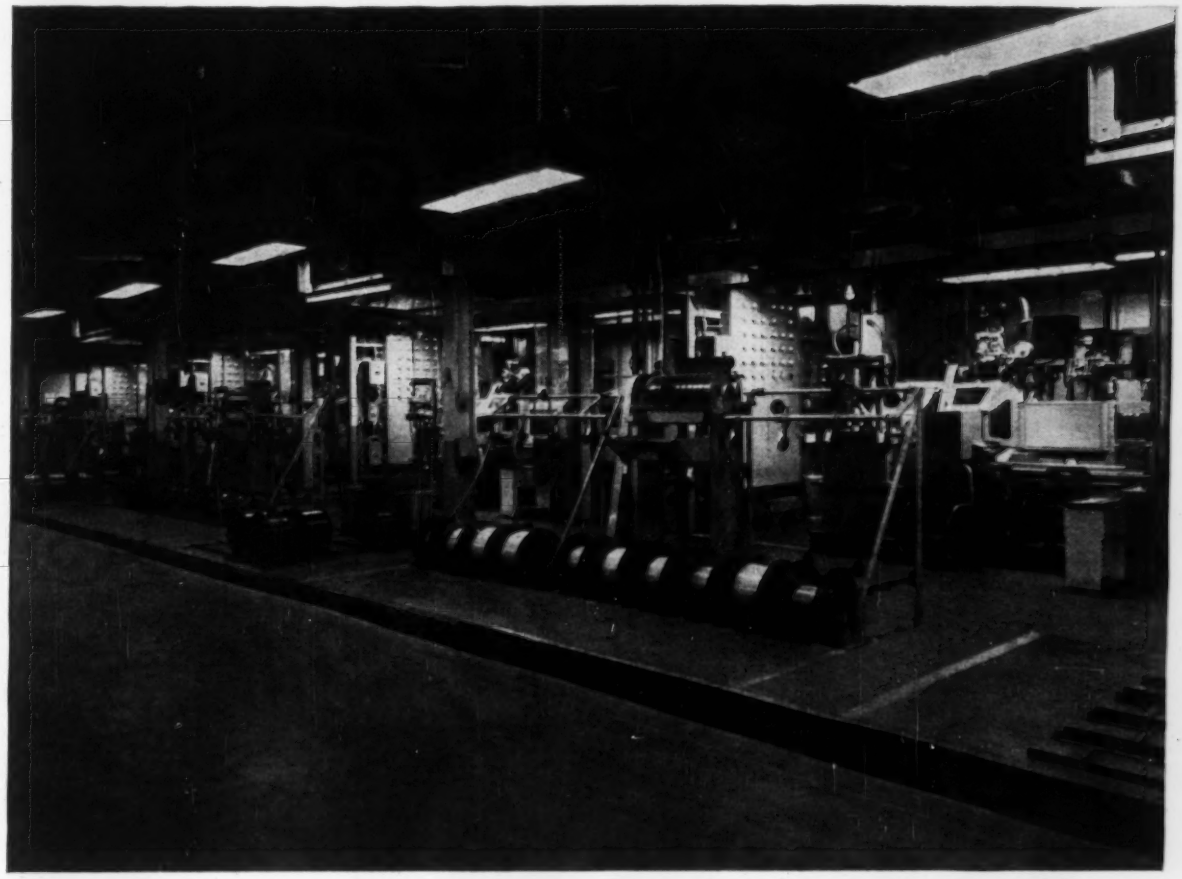
A proposal that fish ladders be eliminated at Wanapum Dam, which the Grant County Public Utility District plans to build 18 miles upstream from Priest Rapids Dam on the Columbia River, has been endorsed by the PUD's board of consultants.

The consultants supported a recommendation that migratory fish be transported from Priest Rapids to the upper portion of the Wanapum pool by truck or barge, believing "such transport would be more effective than fish ladders and the costs would be much less."

It was also recommended that a "dog-leg" design should be followed in construction of Wanapum Dam rather than a straight-line layout. "The estimated construction cost for initial installation under the dog-leg plan," the engineers indicated, "would be no more than the straight-line layout. The cost of additional units would be substantially less under the dog-leg plan." Haza Engineering Co., Chicago, designer of Priest Rapids, also has the Wanapum work.

According to the plans, Wanapum's power plant would have 10 generators of 75,000 kw each. The PUD plans to call bids on Wanapum in December.

In their report, the consultants also praised Merritt-Chapman & Scott Corp.'s work at Priest Rapids.



A view of the fully automatic assembly line at Pompton Lakes, N. J., where Du Pont Electric Blasting Caps, both regular and delay, are completely assembled by electronically-operated machinery.

Du Pont announces the first 100% mechanically assembled electric blasting caps

to assure you even more uniform, more reliable products

Here, in the only factory of its kind, Du Pont Electric Blasting Caps are now made on fully automatic machinery to give you the utmost in reliability, uniformity, and dependability.

Every step in the process, from automatically loading the shell (and inspecting it 3 times during loading alone), to applying the shielded shunt and paper band is electronically controlled.

This revolutionary approach means that every Du Pont Electric Blasting Cap—regular or delay—*must* meet our rigid standards at *every step* or it will be automatically rejected by one of the dozens of electronically controlled "watchmen."

This elimination of the human equation means that all Du Pont Electric Blasting Caps are even more uniform, more reliable, more dependable than ever before.

And you get all these benefits at NO INCREASE IN COST. Call your Du Pont representative or write to E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

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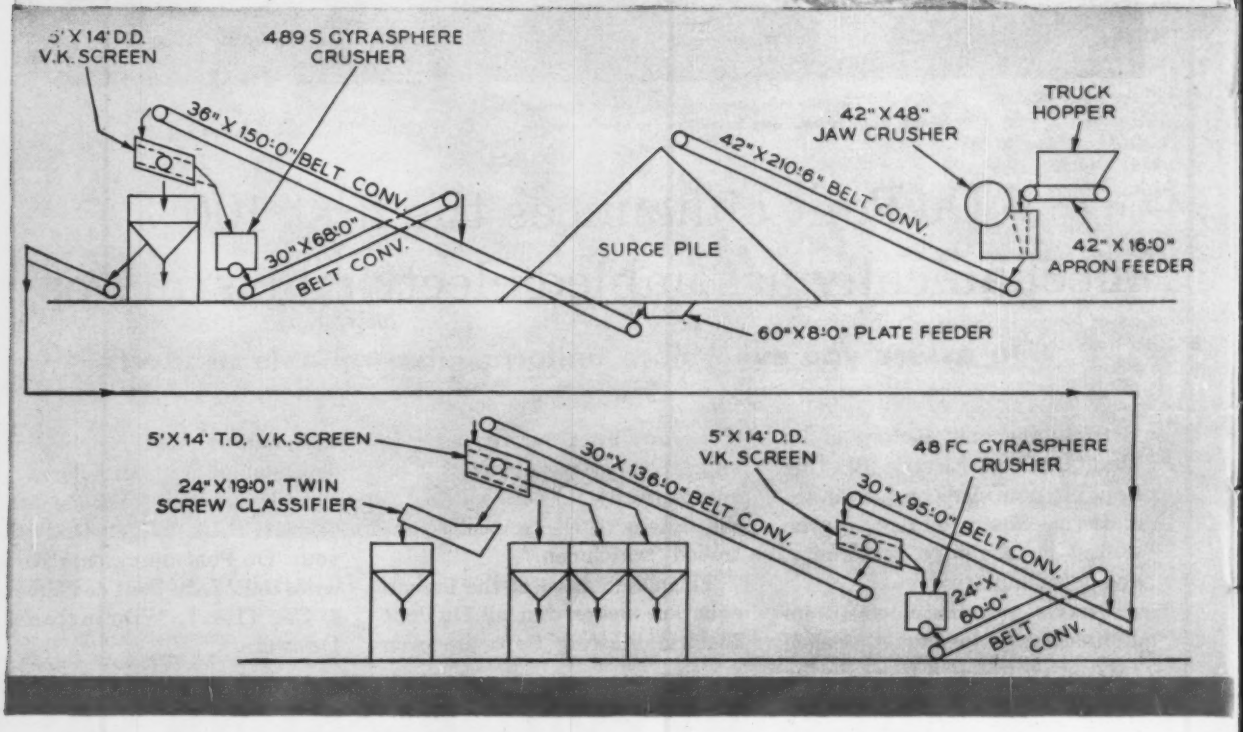
5' X 14' D.D. V.K. SCREEN
489 S GYRASPHERE CRUSHER
36" X 150'-0" BELT CONV.
30" X 68'-0" BELT CONV.
SURGE PILE
42" X 48" JAW CRUSHER
TRUCK HOPPER
42" X 210'-6" BELT CONV.
42" X 16'-0" APRON FEEDER
60" X 8'-0" PLATE FEEDER
5' X 14' T.D. V.K. SCREEN
24" X 19'-0" TWIN SCREW CLASSIFIER
30" X 136'-0" BELT CONV.
5' X 14' D.D. V.K. SCREEN
48 FC GYRASPHERE CRUSHER
30" X 95'-0" BELT CONV.
24" X 60'-0" BELT CONV.

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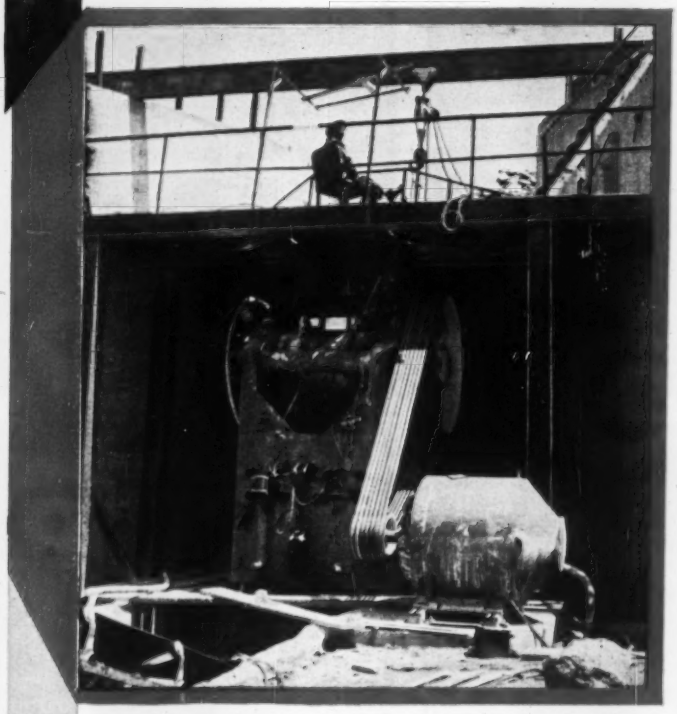
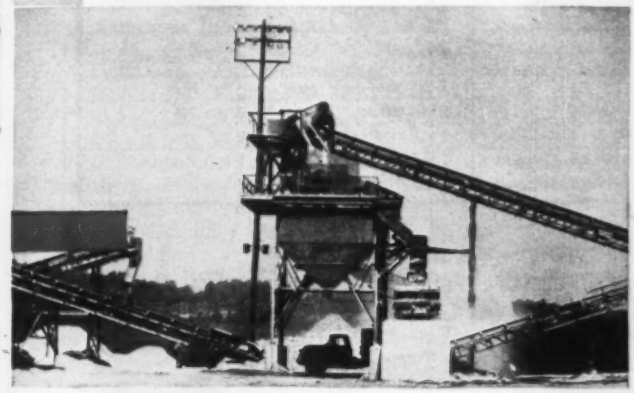


PRIMARY CRUSHING PLANT — **Telsmith 42" x 48" Roller Bearing Jaw Crusher,** with **Telsmith 42" x 16' Heavy Duty Apron Feeder,** delivers 300-400 tons hourly of minus 7" material to the surge pile. Send for Bulletin 280 describing this new, big capacity jaw crusher with welded steel frame.

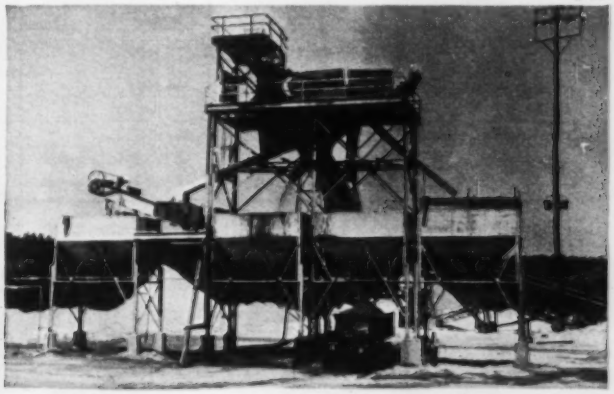
FINISHING PLANT— **All Telsmith equipped—** makes 200-225 tons hourly of minus 1¼" material. Minus 1¼" plus ¾", minus ¾" plus 4 mesh, minus 4 mesh are typical sizes Other sizes are made by changing screen cloth.

Primary Plant works 10 hours a day. The Finishing Plant works 16 hours a day, producing 3 or 4 sizes for use in batch plants and for county and state highway construction. Send for Bulletin 266 describing Telsmith Complete Plant equipment.

Telsmith 5' x 14' Double Deck Vibro-King Screen and 489-S Gyrasphere Crusher.



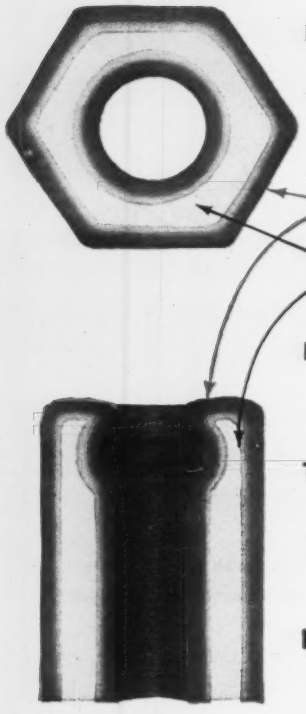
Telsmith 5' x 14' Triple Deck Vibro-King Screen and 24" x 19' Twin Screw Classifier.



Q-36

GARDNER-DENVER DRILL STEEL

Cuts drilling costs...reduces steel breakage



Made like tough rock drill parts

Gardner-Denver sectional drill steel is carburized to produce the same hard case, soft core structure that produces superior rock drill parts. Shot-peening increases fatigue resistance.

High-tensile surface strength resists abrasion, corrosion, nicking and down-the-hole gaff.

Tough, soft core provides compressive strength to withstand shock loads without breaking.

Made from quality steel

Gardner-Denver uses special alloy steels to insure uniform hardening and longer service life.

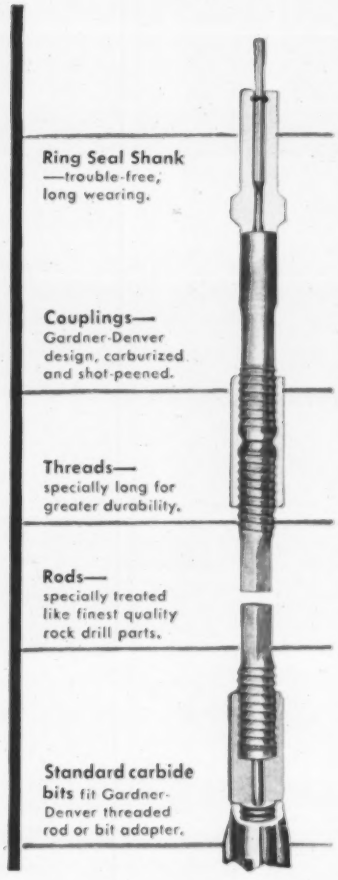
Threads and couplings designed for the job

The extra long threads and couplings of Gardner-Denver design provide greater strength and durability. Couplings are also carburized to provide a hard surface on the threads and a tough core.

Proved on the job

One user drilling hard rhyolite reports steel breakage reduced by 45% after changing over to Gardner-Denver drill steel.

Drill steel represents a large percentage of drilling costs. Gardner-Denver drill steel costs less to use. Write for information.


Ring Seal Shank
—trouble-free, long wearing.
Couplings—
Gardner-Denver design, carburized and shot-peened.
Threads—
specially long for greater durability.
Rods—
specially treated like finest quality rock drill parts.
Standard carbide bits fit Gardner-Denver threaded rod or bit adapter.

Gardner-Denver Sectional Drill Rod Specifications

	CL5-200 Series	CL5-400 Series	CL5-600 Series	CL5-700 Series	CL5-1000 Series
Thread Size	1 1/16"	1 1/4"	1 1/2"	1 3/4"	2 1/2"
Recommended Drill Size	3" and smaller	4" and smaller	4" and 4 1/2"	4" and 4 1/2"	5 1/2"
Recommended Bit Size	1 5/8" to 1 7/8"	2" to 2 1/4"	2 3/8" to 2 3/4"	3" to 4"	4", 4 1/2" and 5"
Rod Sizes	7/8" Hex.	1" Hex.	1 1/4" Hex.	1 1/4" and 1 1/2" Hex.	1 7/8" Hex.
Rod Lengths	2' to 20'	2' to 20'	2' to 20'	2' to 20'	4' to 20'
Coupling Diameter	1 7/16"	1 3/4"	2 1/8"	2 1/2"	3 3/8"
Ring Seal Shank	1" Hex. Collared 1 1/4" Rd. Lugged	1 1/4" Rd. Lugged 1 1/2" Rd. Lugged	1 1/4" Rd. Lugged 1 1/2" Rd. Lugged	1 1/2" Round	2 1/2" Round

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IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

SAND, ROCK AND TETRAPODS placed in 46 ft of water 3,000 ft off southern California coast make . . .

A Man Made Island for Oil Drilling

An island of rock, sand and huge tetrapods will serve as an oil well drilling platform off the southern California coast. It is nearly completed by Richfield Oil Corp. to develop a 1,175 acre oil lease issued by the State of California.

The island, which has a waterline area of about three acres and a net working area slightly in excess of one acre, is 3,000 ft offshore in an average water depth of 46 ft. below MLLW. It is situated half way between Santa Barbara and Venturi, or about 80 miles from downtown Los Angeles.

The concept of constructing offshore oil drilling facilities of rock and sand is in sharp contrast with the usual "Texas Tower" type structures employed, for example, in the Gulf Coast area (ENR Oct. 3, 1957, p. 54 and Oct. 24, 1957, p. 38). Much of the reason for this is legal. Development of offshore oil drilling in California has been retarded—as compared with Texas and Louisiana—by slowly developing legislation. At the time the State of California awarded the lease to Richfield, a court decision required that any offshore construction for oil drilling purposes be of natural materials. This, of course, led directly to the use of sand and rock for construction of this facility, called Rincon Island.

Since the lease was signed in 1954, new legislation has permitted steel platform drilling islands. Some of these are under construction but none has been completed as of this writing. Rincon Island will be the first offshore structure in operation under the California offshore oil program.

Although the law required the type of construction used, it has several advantages over steel platform drilling islands. For one thing, the rock and sand construction provides more working room (Richfield plans drilling as many as 68 wells from this one island); For another, the construction is more permanent and requires less maintenance.

• **Designed as inverted filter**—The island, which contains 400,000 cu yd of carefully placed material, is designed as an inverted filter. The central part is a relatively fine-grained sand fill. This is surrounded by successive layers of rocks of gradually increasing size. The outside shell in the water line area is made of rock averaging 16 tons, and the west face is covered with 31 ton precast concrete tetrapods. The large rock and tetrapods resist the forces of wave action; the filter design permits escape of backflow without harmful uplift or leaching out of the fine grained material.

As in all offshore, open ocean construction, the biggest problem facing designers of the island—John A. Blume & Associates, Engineers, of San Francisco—was what wave force to design for. With the help of Paul Horrer, marine consultant, two sets of interrelated basic data were developed for this particular location.

One set of data is a "wave rose" much like a wind rose used in runway alignment. This indicates the direction of offshore swells and gives some indication of intensity.

Also developed was a chart of wave height probability with a different line for each month of the year. These lines are much like rainfall intensity curves.

With these data, two design decisons were made. One was to orient the island so that it faces almost due west instead of directing its major axis at right angles to the coast line (coast line in this area bears from east southeast to west northwest).

The other important conclusion was to design the seaward edge of the island for waves in excess of 20 ft. To

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low-cost yardage on any size job

You can lick costs with the Oliver 990 because it's sized right for scores of dirt-moving assignments. Use it where larger, costlier scrapers are poor economy... and other types of equipment too slow. With 6.7-yd. heaped capacity, the 990 makes quick work of leveling subgrades, opening ditches, building shoulders, hauling and spreading—as the prime tool on small jobs or a "fill-in" rig on large projects.

100% hydraulic... fast cycle

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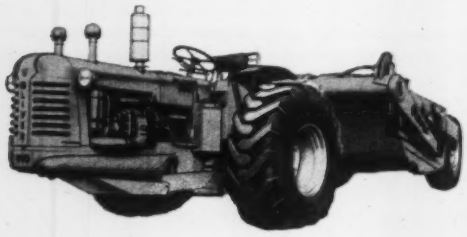
Here, at a modest investment, is the profitable rig for the large or small contractor... or the county department. The 990 is priced thousands of dollars below others. Call your nearby Oliver distributor for all the facts. Ask for free demonstration.



990 Scraper—6.7-yd. heaped capacity. Powered by the GM 106 h.p. diesel; available with 6-speed selective transmission or torque converter. Simple conversion to 4-wheel tractor unit makes it quickly available for use with other pull attachments. Write for Bulletin I-703.

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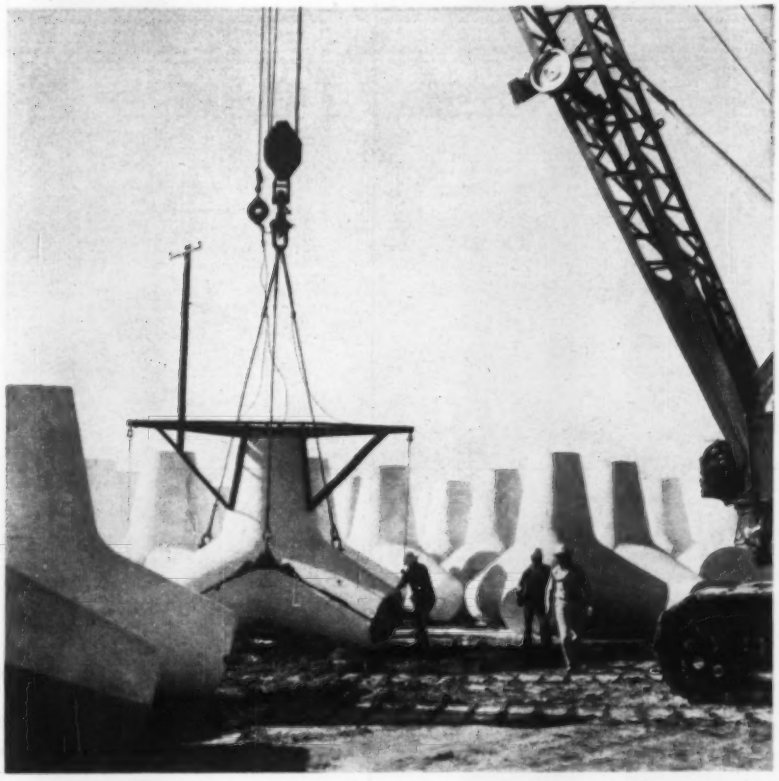
. . . Tetrapods form seaward face of man made island



LIFTING FRAME keeps unreinforced concrete in compression, makes it safe to take the 31 ton tetrapods off bottom form three days after casting.

resist this wave force, the designers calculated that rocks up to 40 tons would be needed. Accordingly, alternate bids were taken using natural rock, concrete tetrahedrons or concrete tetrapods for the largest required size. The low bidder—Guy F. Atkinson Co.—chose to use tetrapods.

The seaward edge of the island extends 41 ft above MLLW to minimize effect on drilling and pumping operations of wave run-up. The 31 ton tetrapods extend from El-19 to near the top of the face. Actually, on the inside, the pod section slopes to within 10 ft of the bottom to key the pod zone into the rock mass.

The other three sides of the island reach El 24. Rock facing on them is largely 7 ton average size, but there is a considerable zone of rock averaging 16 tons.

A concrete wall will separate the work area from the rock dikes, and after the fill has been placed, 68 shells of 22 in. dia, ¼ in. thick steel will be driven well into the underlying formation. These shells will serve as casing for oil drilling purposes.

The original concept of the island was that it would be constructed without a causeway. As a result, the leeward side of the island includes a concrete wharf. Model studies led to the adoption of arms or rock dikes protecting this wharf from wave action.

The original wharf design called for it to be 106 ft long and 44 ft wide. Addition of a causeway connecting the island to the shore has resulted in extending the wharf an additional 22 ft. The structure is supported on 16 in. octagonal prestressed concrete piles averaging 80 ft in length.

• **Island construction**—Primary consideration in the construction effort was location of a suitable rock source. Other considerations include loading facilities, offshore floating equipment and proper alignment of the fill zones.

A proven source of rock was available on Santa Cruz Island off the southern California coast, but the contractor chose to develop a quarry on shore. Rock at the quarry is sedimentary sandstone of varying quality. Some of it is nearly as hard as granite; some is not too good. Therefore, rock samples are subjected to a sodium sulfate test to determine suitability for use in the exposed seawater location. Thus, the problem in the quarry is selectivity of rockfill for the various zones.

The quarry, which is about 5 miles from the contractor's loading facilities, has been developed by the coyote hole method. This involves drilling a small

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...a window for every need

All Adlake aluminum windows require no painting, no maintenance. They will not rattle, warp, stick, swell or rot. The sliding sections have patented serrated guides, and both sliding and pivoting sections have double weatherstripping of rubber-impregnated high pile woven wool, impervious to the elements—a combination insuring noiseless, fingertip operation and completely satisfactory performance indefinitely. The following Adlake aluminum windows satisfy every need in modern fenestration:

Adlake Reversible Windows (*above*) Both sides may be washed from the inside.

Adlake Projected Windows Available with panes projecting inside or out. Vents are weatherstripped.

Adlake Double Hung Windows Minimum air infiltration, no water intrusion, and noiseless, fingertip operation.

Adlake Curtain Wall Windows These give the airy "all-window" effect appropriate in this modern type construction.

Stationary Windows—for any fixed installation.

Double Glazing Adlake reversible, projected, double hung and fixed windows may be constructed with double glazing.

FOR COMPLETE DETAILS SEE THE ADLAKE 36-PAGE LISTING IN SWEET'S ARCHITECTURAL FILE, OR WRITE

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. . . Production line methods impossible in material placement

WHITE WATER around island indicates force of waves. Seaward side (left) stand 41 ft above MLW and will withstand 20 ft waves.

tunnel (about 4 ft dia) 50 to 100 ft into the quarry face then branching out in a T or Y shape. From 5 to 15 tons of ammonium nitrate explosive, capable of being detonated with ordinary dynamite sticks, are packed into the ends of the tunnels.

Detonation brings the steep hillside down for shovel and truck operations with some secondary blasting of the larger pieces needed. With about 14 of such coyote holes, the quarry has provided all the rock materials that were needed for the island during a year's operations.

Core material, processed from a steep hillside pit opposite the island, is pushed by bulldozers into truck-loading hoppers. The material is hauled to the contractor's loading facilities for barging to the island.

The construction yard is located some 5 miles upshore from the island. It includes a pier that extends 800 ft from shore with a 295 ft long wharf at the outshore end. The wharf is equipped with a stiffleg derrick having a 120 ft boom that can lift 30 tons at 90 ft radius.

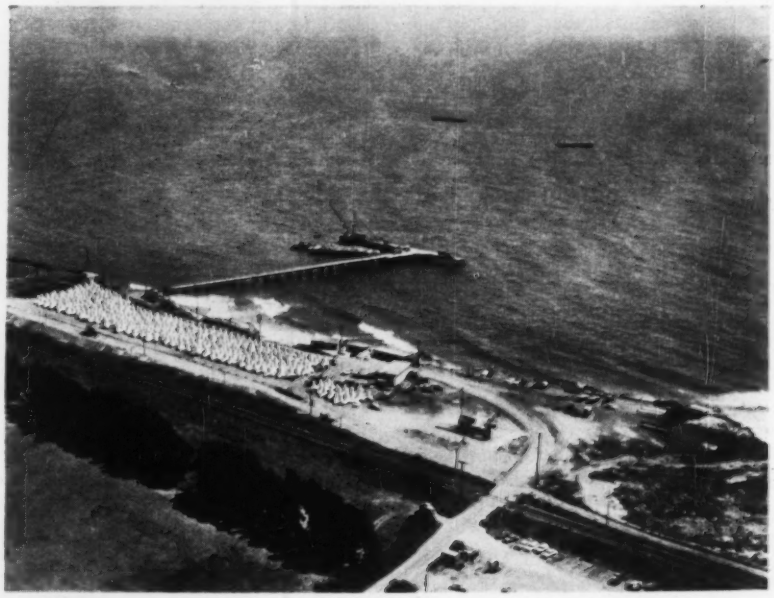
Development of production line techniques on sand and rock placing has been difficult because of the intermittent nature of each operation. Before any core material could be placed, a lift of the smallest size rock had to be set on the ocean bottom. Core material was then put inside this, and the placing of the various sized rock was resumed. This procedure required the placement of four separate lifts of core material. The sides of the fill are sloping so that in effect the rock zones to a certain extent overlay the core material.

Core material and small sized rock are loaded on barges from a skip handled by the stiffleg derrick on the wharf. This material was unloaded during the underwater fill stages by bulldozers that simply pushed it off the side of the barges. After the island appeared above water these grades of fill were unloaded by barge mounted derricks equipped with clamshell buckets.

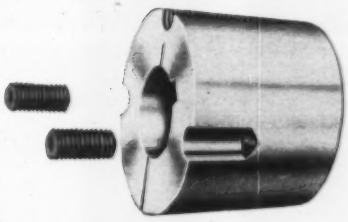
Depending an their size, the rocks were both loaded on the barges and placed by orange peel buckets or rocks tongs.

The offshore work was handled by two derrick barges and a fleet of rock barges that hauled up to 800 tons of material a trip.

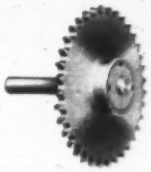
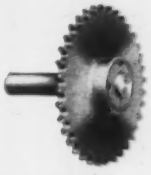
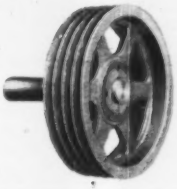
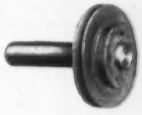
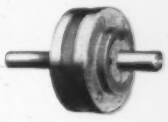
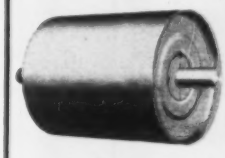
A series of surveying towers was used to align the material, and location of the dumped material was checked during the underwater stages by a launch-



TETRAPODS, ready for trans-shipment to island, fill storage yard near contractor's 800 ft long loading pier. Stiffleg on wharf has 30 ton capacity at 90 ft radius.



TAPER-LOCK Bushings are *Interchangeable!*

Change from shaft to shaft				
Change from size to size				
Change from sheaves to sprockets to couplings to conveyor pulleys				

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In the past, smooth surfaced waterstops have been used in concrete structures in the belief that they will effectively eliminate leakages resulting from water percolation around the waterstop. It has been a common practice to specify 6" waterstops for "small jobs" and 9" waterstops for "big jobs" . . . this practice was not based on the results of any scientific analysis. A series of tests have now been conducted by the Ontario Research Foundation in order to determine how the functional performance of DURAJOINT Waterstops, 4" and 6" wide, will compare to the functional performance of Dumbell Type Waterstops, 6" and 9" wide, when embedded in concrete and subjected to hydrostatic pressures of various magnitudes.

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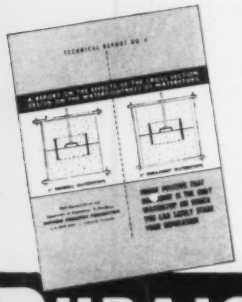

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. . . Trestle is 3000 ft long

mounted Fathometer, with skin-divers used for underwater inspection.

Casting facilities for the 1,130 tetrapods required on the job are located near the loading pier. Twelve sets of steel top forms were provided and there were three times as many bottom forms as top forms. During full production, the units were cast at the rate of 12 a day. After three days they could be removed from their casting position by use of a special lifting frame that keeps the bottom legs of the tetrapods in compression. When the concrete has been fully cured, the 31 ton units are lifted by a sling arrangement.

Concrete for the tetrapods used 3 in. maximum sized aggregate and a 5 sack mix of type II cement. To obtain the densest possible mix, water-cement ratio was kept to 0.48 and slump to 1½ in. Membrane curing was used.

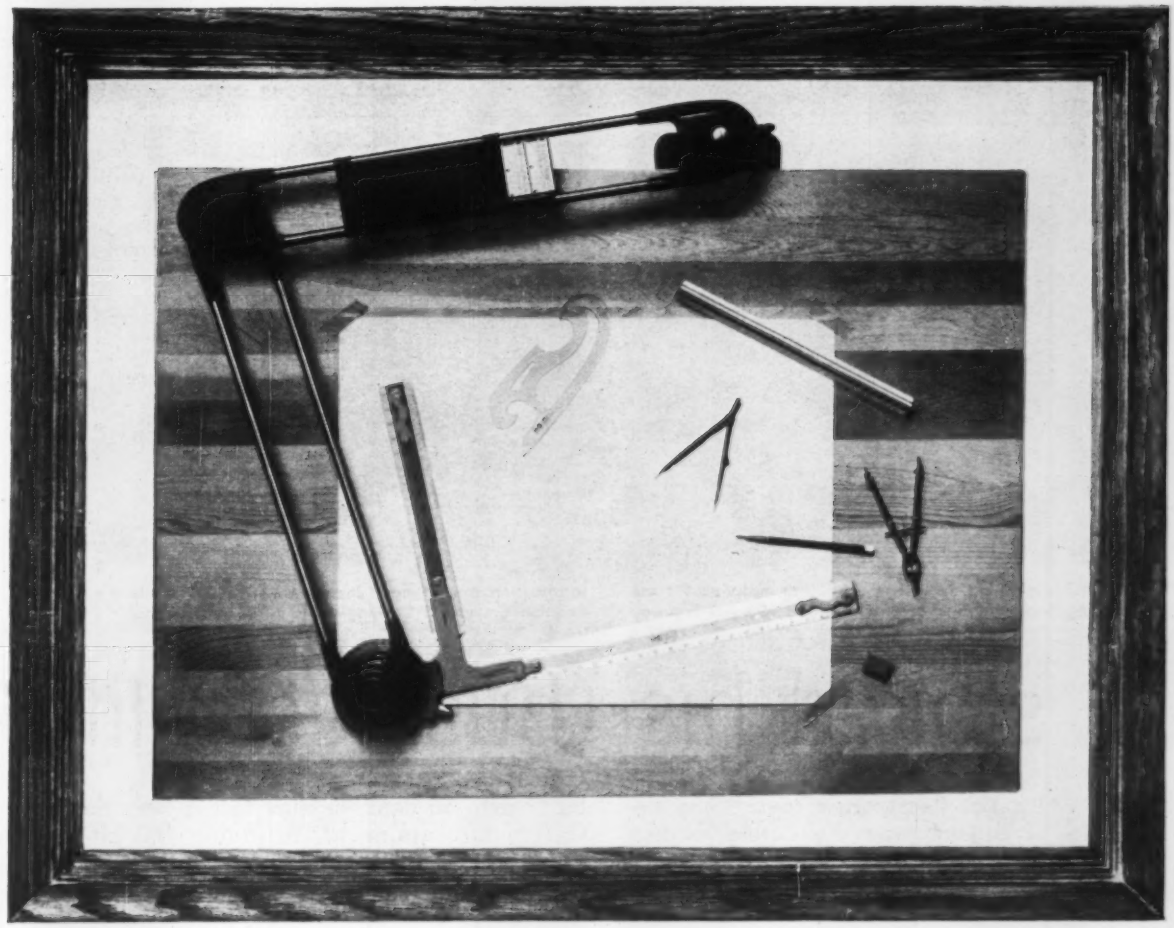
A 25-ton truck crane moved the tetrapod forms and charged the batch plant. Concrete was mixed in a paver. Finished pods were moved by a heavy crawler crane. The 31 ton units were hauled to the loading pier by special low bed trailers, and were carried to the island 25 to a barge.

• **Causeway an afterthought**—On obtaining the valuable oil lease, Richfield officials' first consideration was to get the island under construction. This done, a reanalysis of the situation indicated the desirability of connecting the island to the shore by a trestle nearly 3,000 ft long rather than depending on marine operations.

The causeway is in itself a unique structure. To minimize wave forces, the deck is kept substantially above water level—35 ft above. Supporting units are a minimum number of steel pipe piles (for minimum wave exposure and least maintenance cost). Bents are placed on 40 ft centers with every other bent a single vertical steel pile. Alternate bents are double, battered units. And at the four points along its length the causeway has sets of piles bracing it in the longitudinal direction.

The narrow causeway is being built from a temporary timber trestle by Healy-Tibbitts Co. of San Francisco. The steel pipe piles for the permanent structure vary from 16 to 24 in. in dia. and will be driven by a 30,000 ft-lb hammer.

• **Credits**—The island work is under the direction of W. J. Travers and R. O. Pollard of Richfield Oil Corp. Supervising the design for John A. Blume & Associates, Engineers, was H. J. Sexton, project engineer. The resident engineer is James M. Keith, and D. E. Root is in charge of the project for Guy F. Atkinson Co.



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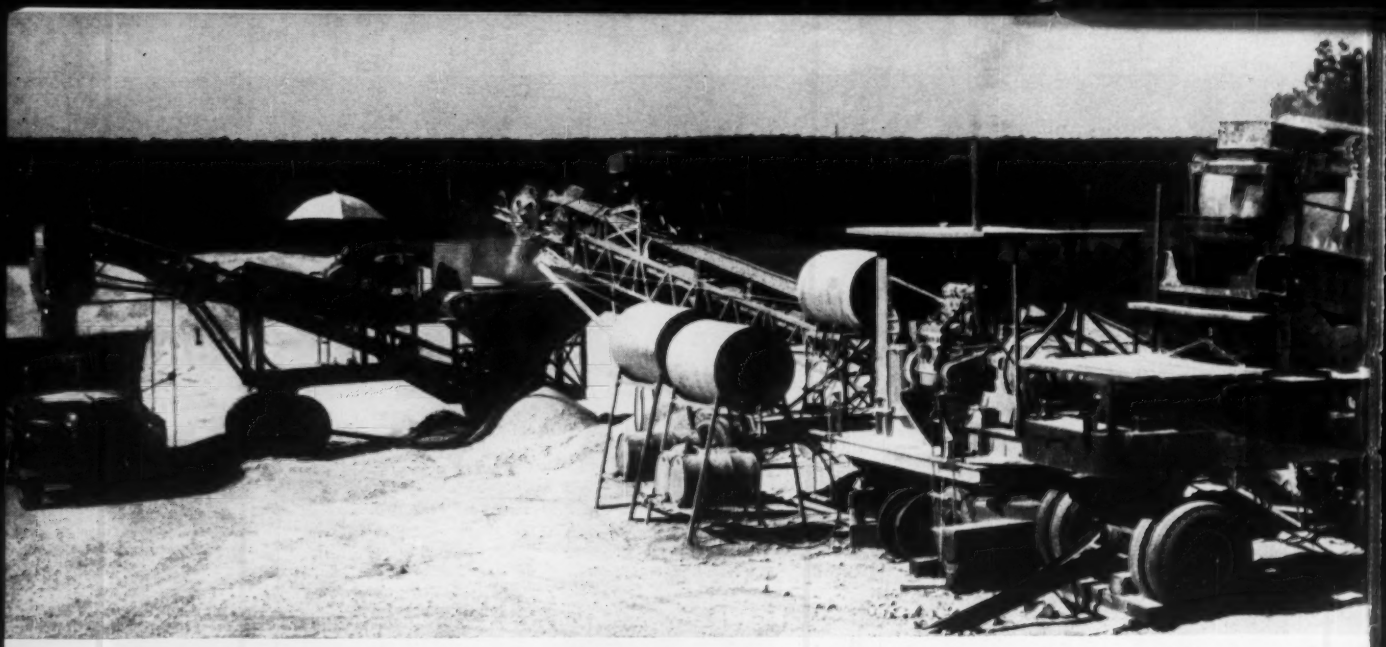

On this portable crushing operation, producing materials for use on a grading and drainage contract for the Missouri Freeway construction project near Joplin, Mo., the W. J. Menefee Construction Co. uses 3 Cat Engines to power this crusher.

He staked his (business) life

This big 100% Cat fleet owner says: "The *dependability* of engine power by Caterpillar has always made it possible to anticipate *true* costs—takes the guesswork out of bidding."

From a modest beginning as a small contractor, the highly successful W. J. Menefee Construction Company of Sedalia, Mo., has bet its business life on Caterpillar Engines and machines across the board.

"Experience has shown us that we can always rely on Cat Engine power," says Mr. E. W. Menefee, president.

Recently this big spread was responsible for 9 miles of grading and drainage, including the interchange, to join the Missouri Freeway with Oklahoma's Northeastern Turnpike. Besides a variety of modern, heavy-duty Cat Engines to power crusher, shovels and compressors, Menefee is getting this big, tough job done on time with a large fleet of Caterpillar equipment, including DW21s and DW-10s, D9s and D8s (with No. 28 Rippers) and No. 12 Motor Graders.

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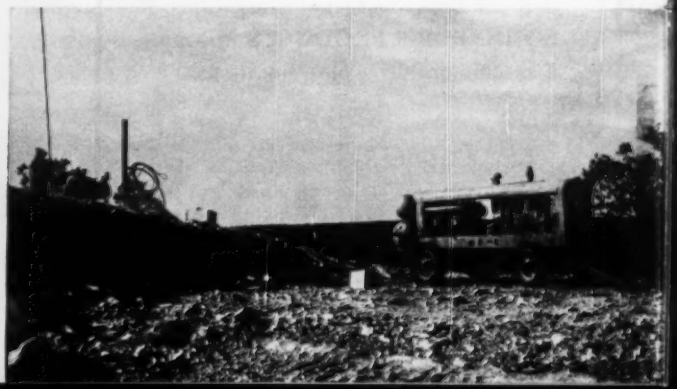
Cat DW21 Wheel Tractors pushloaded by a big D9 work in tough chert conglomerate on Menefee's Freeway job.

Cat Diesel drives a pneumatic compressor drilling blast holes in rock quarry for materials used on the Freeway job.



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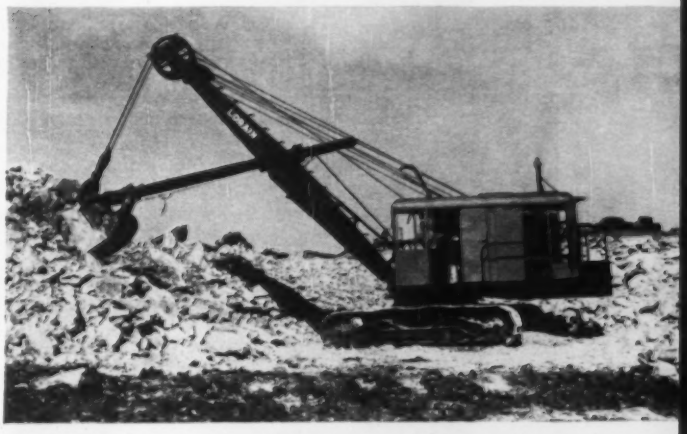

A Cat D337 Engine powers this Lorain shovel feeding rock to Pioneer portable crushing plant — part of the W. J. Menefee Construction Company's big Missouri Freeway linkage project.

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Docking Fenders:

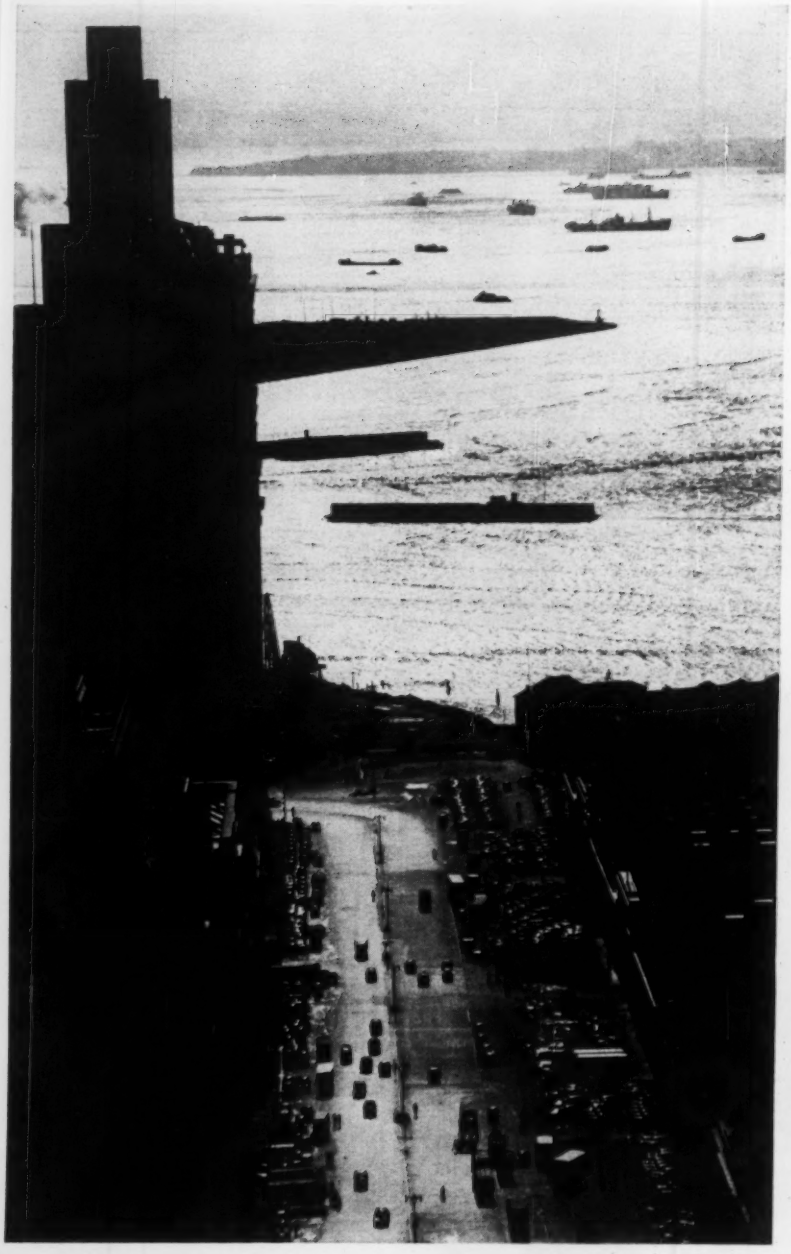
Today's teeming harbors point out the need for advanced thinking when wharves and piers are to be designed. An important—yet often neglected—detail of waterfront engineering is that of . . .

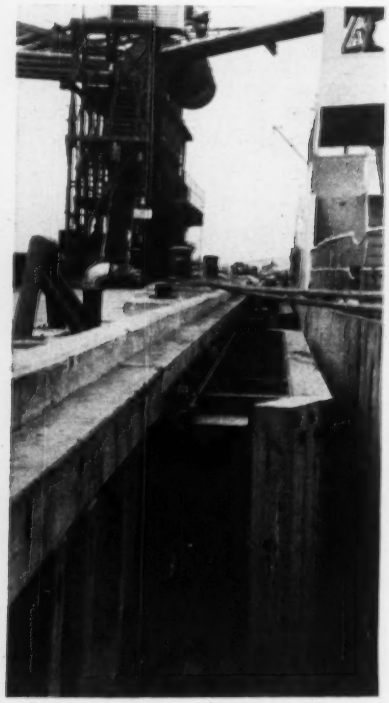
Louis A. Volse
Assistant Editor

Bringing a ship alongside a pier or wharf without damage to either ship or structure is an important and difficult part of any sea captain's job, and as ships have grown larger and more powerful, docking problems have increased—even when tugs are on hand to assist. Moreover, the problems may be more critical in a small harbor than in a large one. Docking an 80,000 ton oil tanker in the port of La Salina, Venezuela, for example, can be harder to do than laying an ocean liner up to a pier in New York.

To meet this docking problem, more and more wharf operators are turning to the use of impact fenders, whose design, because of the large but uncertain forces which must be resisted at a reasonable cost, has forced engineers to a variety of ingenious and empirical solutions. Since, as a result, there is no such thing as a standard fender design, ENR undertook a study of current practice in the fender design field in an attempt to assemble the best knowledge available.

Design decisions on fenders are based on considerations of tide, current, shipping volume and size, weather conditions, need for pier protection and, very





RUBBER BLOCK absorbers often make excellent energy dissipators. A suspended system faced with wood protects the ship.

Key to Pier Protection

largely, on how much the owner wants to spend. Even the most extravagant fender system, however, can't cushion the impact of a large ship when it is coming in too fast. Probably both ship and pier will be damaged in extreme cases, no matter how good the fender system.

The designer's problem, then, is to come up with fenders that will protect both ship and pier as inexpensively as possible, have low maintenance costs and be durable. Most important, the fender must do its number one job—protect the ship from damage as it comes alongside the pier.

• **Fender depends on pier**—Fender systems depend on the pier or wharf design. For instance, a pier designed to be flexible—one that will absorb some of the impact—will dissipate much of the ship's kinetic energy. If the pier is designed to be rigid and immovable, however, little of the energy can be transferred to it, and the fender system must take the shock. If the fender doesn't do the job, serious damage may result.

The engineer also must consider that a stronger fender may permit a less costly pier design. That is to say, the fender can, by distributing the impact forces along the wharf, react over a wider area, rather than at the more limited point of contact between ship and pier. The pier can thus be of less expensive design.

In any design, the starting point is cost studies to find the economical break-point for different pier-fender combinations. Since the fender system can be anything from expensive mechanical or gravity shock absorbers to old rubber tires, the engineer must calculate the relative cost of pier and fender for different applications. Thus, he can couple an extremely strong (and costly) pier with fairly efficient but reasonably priced fenders—and the system will work. Or a less expensive pier with a high priced fender system might also do the job. The question then becomes one of relative costs, for somewhere between the two extremes lies the most economical system.

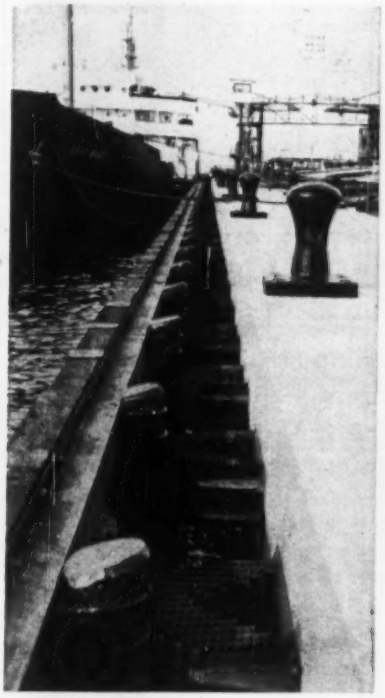
• **No standards**—It would be convenient if there were a standard fender design that could be used at any pier. But neither ships nor nature are conventional. Ships come in assorted sizes, with different handling characteristics, with from one to four screws, and even as in ice-breakers and ferries, with screws at both bow and stern. They have different power plants—different speeds. And they're navigated by men who have differing skills in seamanship and ship handling.

Then, each harbor has its special problems: Some ports have little tide change, while others may have as much as 40 or 50 ft. Some harbors are exposed to weather and wind, others are troubled with swells of long or short periods. Seiches (horizontal oscillations of water) can be particularly damaging to ships alongside piers. And sometimes ships must berth in rough water in nearly open sea, as do some banana boats in Central American ports.

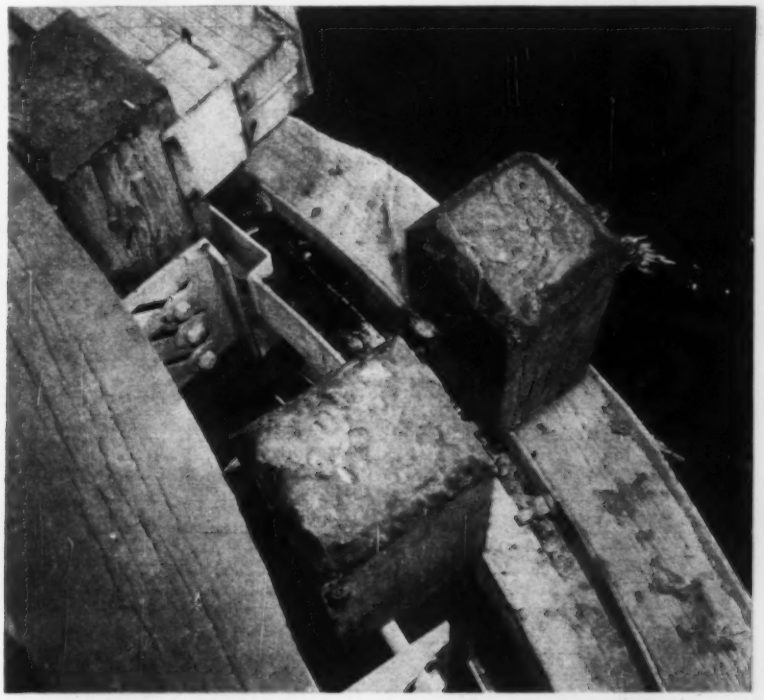
• **Design considerations** — Protecting ships and piers became more of a problem as ships' size, weight and speeds increased and as they came to be made of steel.

With ships over 10,000 ton displacement, rigid fendering unable to absorb energy, can cause permanent structural damage to the ship unless very low approach velocities are used. (Increasing the rigidity of the main structure to take this increased impact will cause high unit stresses that will cause failure of the ship's plates and framing.)

The fenders, rather than the pier, should absorb most of the ship's kinetic energy. And, to be effective, the system must be designed for ships of fairly uniform tonnage. For example, a system designed as flexible for a 50,000 ton ship is quite rigid for any smaller



RAYKIN BUFFERS are a refinement of the simple rubber block system, designed for heavier loads by using rubber in shear.



RETRACTABLE SYSTEM, in which inclined slots guide fender to cause deflection and energy dissipation by lifting against gravity. Installed at Brooklyn Navy Yard, the system has given excellent service combined with low maintenance costs.

. . . Imaginative fender designs assist at problem piers

ship. Damage to the smaller ship would be likely, for while there is room for fender displacement, the resisting force would be too great to permit movement. An ideal fender system absorbs impact energy at any reasonable velocity of approach without transmitting the energy to the main structure.

Here's how an *ideal* (but impossible to attain) fender system reacts:

1. The kinetic energy of the ship is absorbed completely within a definite distance, the distance depending on: (a) ship's mass; (b) normal approach velocity; (c) maximum permissible force that can be taken up by the ship's hull.

2. When the ship comes in fast, the fender gives way quickly. That is, the rate of absorbing energy varies directly as the speed of the approaching ship. Faster approach, faster absorption; slower approach, slower absorption.

3. The fender reacts with large maximum forces for large ships, and with small maximum forces for small ships.

4. The rate of energy absorption increases as the device deflects. That is, the amount of energy absorbed varies directly as the distance moved.

Now, here's what can happen to a ship's kinetic energy as it approaches the wharf:

1. Energy can be absorbed by elastic deformation of the pier and fender system. This can take the form of bending structural members (wales, piles, etc.); or of deforming fenders, bumpers or isolators; or of compressing springs, rubber blocks or hydraulic and pneumatic devices.

2. Energy can be absorbed by deforming the ship's hull elastically, by causing the ship to roll or yaw, by piling up water between the ship and shore structure, or by deforming the harbor bottom. These harmless means dissipate about one half of the total energy.

3. Finally, energy can cause permanent damage to either the ship's hull or the pier structure. Thus, any energy not absorbed either by elastic deformation of pier, ship, fender or water and harbor bottom will show up in plastic deformation of ship and or pier—eventualities to be avoided, of course.

• **Energy absorption theory**—The kinetic energy of the ship is represented by

$$E_k = \tfrac{1}{2}\, Mv^2$$

where M is the ship's mass, v is the ship's velocity, and E_k is expressed in inch-tons (using long tons, 2,200 lb).

The fender's absorbing capacity, on the other hand, can be shown to be:

$$E_a = C_1\, \delta^x$$

where c_1 is a constant referring to the number of fenders absorbing energy, δ is the distance deflected, and x depends on the characteristics of the fender, being usually 1 or slightly higher.

Efficiency, then, equals the kinetic energy of the ship divided by energy absorbing capacity of the pier's fender system:

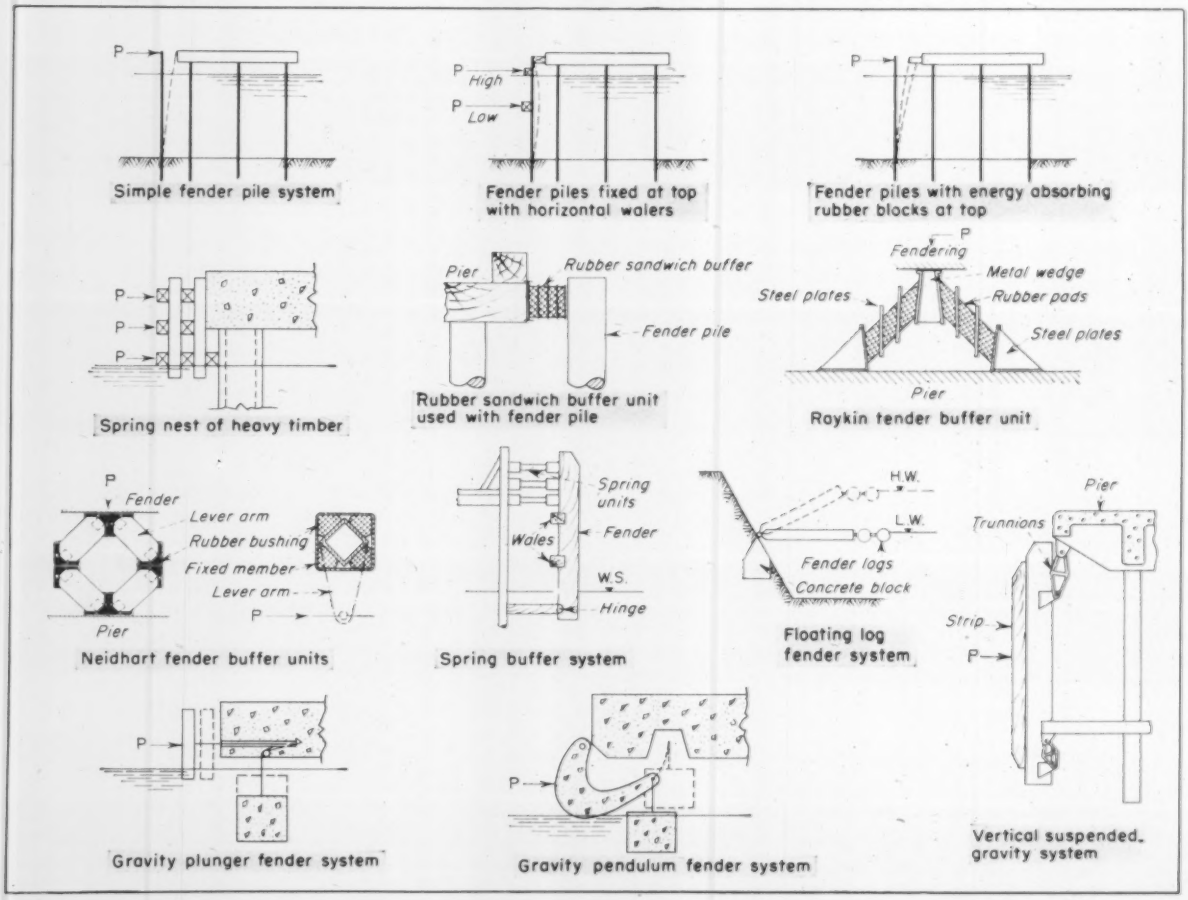
$$E = \frac{E_k}{E_a}$$

When E equals 1, the fender is correctly designed.

As the efficiency decreases from one, a tendency to damage the ship is likely, while the pier itself tends to hold up. When greater than one, excess energy is taken up by the pier instead of by the ship.

(*Continued on page 44*)

Some Fender Systems In Use Today



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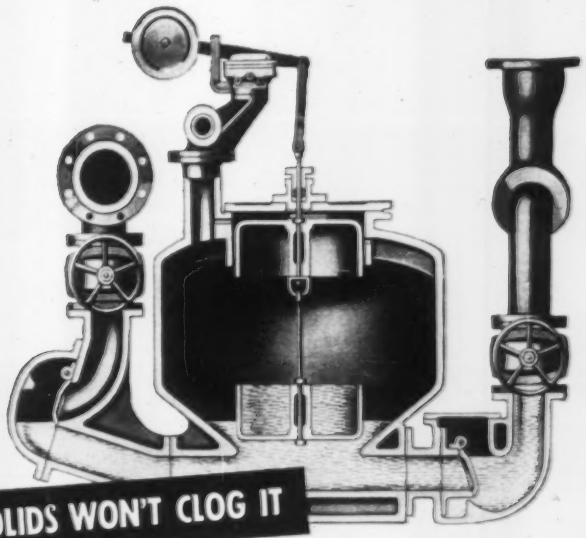

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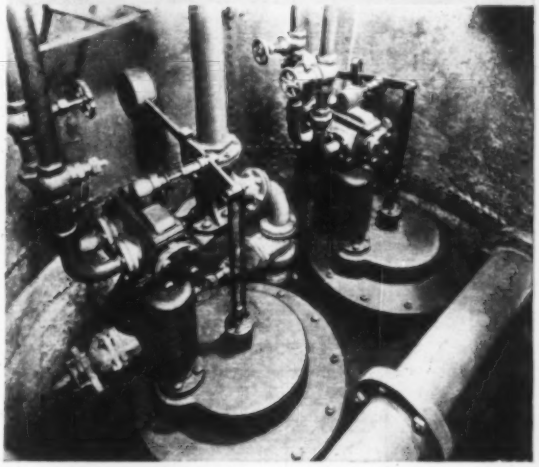

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. . . Designing pier fendering to meet today's needs

• **Force exerted by the ship**—While most engineers agree that not all the energy is transmitted to the structure, just how much goes where is not really known. A good general guess by many designers, is that $0.4E_k$ goes into the pier. Coefficients of from 0.25 to as high as 0.91 are used often, though the higher values tend to apply to round-bottomed ships of slight draft.

Still, design depends on the ship's size and velocity. An average impact energy figure is about 400 inch-tons, with a 1,200 inch-ton figure commonly taken as the accident impact energy level. When this amount of energy goes into the structure, it means that the limit of fender capacity has been reached. It is common practice to design the fender and pier so that if the velocity greatly exceeds the accident energy line, the ship will take up the excess energy in the form of hull damage. Though important to protect the ship, it is impractical to design a pier that would collapse rather than cause hull damage to a ship.

To give an idea of velocities involved, the accident velocity energy line for a 30,000-ton ship would be about 0.75 ft/sec, for 20,000 tons displacement about 0.85 ft/sec, for 10,000 ton displacement, 1.3 ft/sec, for 5,000 tons 1.8 ft/sec.

Consensus is that spacing of fenders should be such that from three to ten units act on the vessel as it makes a normal approach to the pier. Again, the engineer's judgment and experience usually decide these matters. Spacing of the fenders depends on the kinetic energy, the ship's approach angle, the shape of the vessel's side, the length of the ship, the capacity of the individual fender, and the unit allowable stresses in the hull of the ship.

• **Impact against a quay wall**—An interesting theory is that the proportion of energy taken by an unfendered pier to that taken by the ship is in a ratio of $\frac{M}{M+m}$ where M is the mass of the ship and m the mass of the pier structure. Thus, when the mass of the pier is relatively small compared to the mass of the ship, the greater part of the energy is transmitted to the pier. With a large pier and smaller ship, the ship takes more of the strain. With a large and rigid pier, then, most of the energy will be absorbed by the hull of the ship—and to prevent damage, a fender system is a must.

A quay wall is an example of a large mass of material compared to a relatively small ship. Yet some harbors have installed simple bumper systems with no energy absorption devices, the designers evidently having reasoned that the ships would dock carefully to prevent damage to themselves. This attitude is understandable, since it saves the wharf owner construction money and reduces his maintenance costs where he has little or no fendering.

However, such procedure can be disastrous to any ship unlucky enough to make a bad approach. In the long run, experts argue, the additional cost of a good fendering system will pay off for both shipper and wharf owner.

• **Fender design methods**—In any given design problem, the kinetic energy of the ship is equated to work done by the system. That is:

$$E_k = C \tfrac{1}{2} m V^2 = F_a \delta$$

where F_a is the average reacting force of the fender, δ its deflection.

The designer then finds the total amount of energy to be absorbed by pier and fenders by using the energy formula. He knows the ship's mass and he assumes a maximum approach velocity. Finally, he decides what coefficient to use to take care of dissipated energy. Then, assuming a trial design, he calculates the allowable deflection from structural theory. By successive trial and error, the proper system is finally designed.

In the case of a fender piling, for example, he substitutes in the above equation and solves for F_a. Since this represents an average force, twice the value determined is used for the maximum applied at the point of full deflection. (The force gradually increases from zero at the start to a maximum at full deflection.) Since the force should be taken up by from 3 to 10 piles, depending on their spacing, dividing the average force by the number of piles, will give the force per pile. Total deflections can next be computed, and design checked and completed.

In addition to timber piling, steel H-beams may be used. But their flexural deflection is rather small. Spring type steel might be useful here, but its cost is high. Concrete piling is another possibility, which up to this time has not been fully explored as fender piling.

• **How to absorb shock**—Along with piles, various devices may be used to absorb impact between the pile and the pier structure. These include, most popularly, a choice between a steel spring and rubber, although hydraulic and pneumatic plunger systems have been used in Europe to some extent.

Rubber is preferred to the steel spring by most engineers, since there is said to be no maintenance or corrosion problem. (Large steel spring systems tend to jam and need regular maintenance.) Most troubles with rubber deterioration have come to an end now that synthetics are in use.

Rubber, which has come into its own more generally within the past 10 to 20 years, may be placed behind piles in the form of simple blocks, or rubber sections may be fabricated to form such shapes as blocks sandwiched in simple series compression, and retained in a cylinder to maintain its position and to prevent collapse of extra-long sections.

W. P. Kinneman of Raymond Concrete Pile Co. has developed and patented a device that uses rubber mostly in shear to absorb impact. The device has been used at several wharf installations, the latest being at some docks in Lake Maracaibo, Venezuela, where heavy supertankers are berthed.

A system developed in Europe, known as the Neidhart fender buffer unit is also available, rubber bushings being displaced by a steel insert activated by a lever arm.

Goodyear Rubber Co. offers heavy rubber tubing that can be either hung at the side of a wall or placed behind waling or fender piles. Hung fenders, attached directly to the pier with no contact to harbor bottom, offer a good use of rubber as an absorbing medium.

Bak-Co. Manufacturing Co., a rubber manufacturer in Tenafly, N. J. is developing a telescopic rubber sandwich device that may prove useful as a shock absorber.

Gravity fenders now are becoming increasingly popular in this country, although they have been used for many years in Europe. Their principle of absorbing energy is to raise a heavy weight, thus changing kinetic to potential energy.

This can be done in a number of ways, some of which are illustrated here. One gravity fender that has shown promise for lighter ships is in use at the Brooklyn Navy Yard. Developed and patented by Virgil Blancato, its weight is raised by inclined slots attached to the fenders to permit both deflection and elevation of the system. Four years' experience has demonstrated that they need little maintenance and are easy to install.

• **Don't overdo it**—In discussing the various types of more expensive systems, one must not overlook more elementary types. Portable fenders of faggots, timber, and old tires are practical and useful, and may save money and do the job well. It is often easy to go into elaborate systems that are unnecessarily costly.

In its final analysis, good design is the result of common sense and past experience as well as the application of sound engineering principles. This is especially true in the harbor structure field, where convention and standardization are of small concern.

69,000 LBS. AT 13 FEET

Loading a 69,000 lb. major part of a big diesel engine is a routine job for this 40-ton Marion 43-M Truck Crane. Such features as power raising and lowering of the gantry and ballast make it easier to get ready for such a job. When the lift begins, such features as the torque converter and Marionair Control give the operator big advantages, whether the load is heavy or light. See your Marion Distributor.

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TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

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A Division of Universal Marion Corporation

Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).

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Company .....

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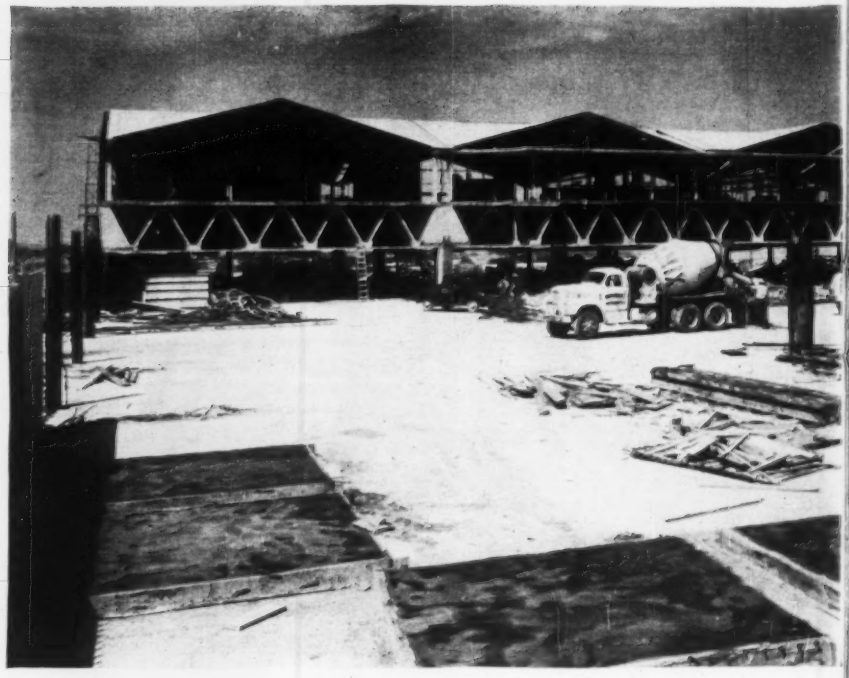


Column-free areas desired by Texas Instruments, Inc., for its two-story Dallas plant were obtained with a hyperbolic-paraboloid concrete roof and a concrete space truss between first and second stories

Deep Space Truss Gives Plant Room for

In the design of a new building, air conditioning usually is taken into consideration in the selection of the structural-framing system to be used, but seldom is it the major determinant. For the new Texas Instruments, Inc., plant in Dallas, Texas, however, it was.

To meet space needs of air-conditioning equipment, the second floor of this two-story building is supported on a story-high concrete space truss, which provides a plenum with room for ducts and air-handling equipment.

This space frame, being 9 ft deep, also offers the advantage of widely spaced columns in the first story, because it spans large distances economically. And the owners wanted the large, unobstructed space for flexibility in laying out operations.

Bays on both the first and second floors are 63 ft wide. This clear span was obtained over the second floor by building the roof as a series of thin-shell concrete hyperbolic-paraboloids.

• **Controlled environment**—The plant manufactures semi-conductor electronic devices. To meet production and engineering requirements, two basic temperature and humidity conditions were specified for the 310,000 sq ft building:

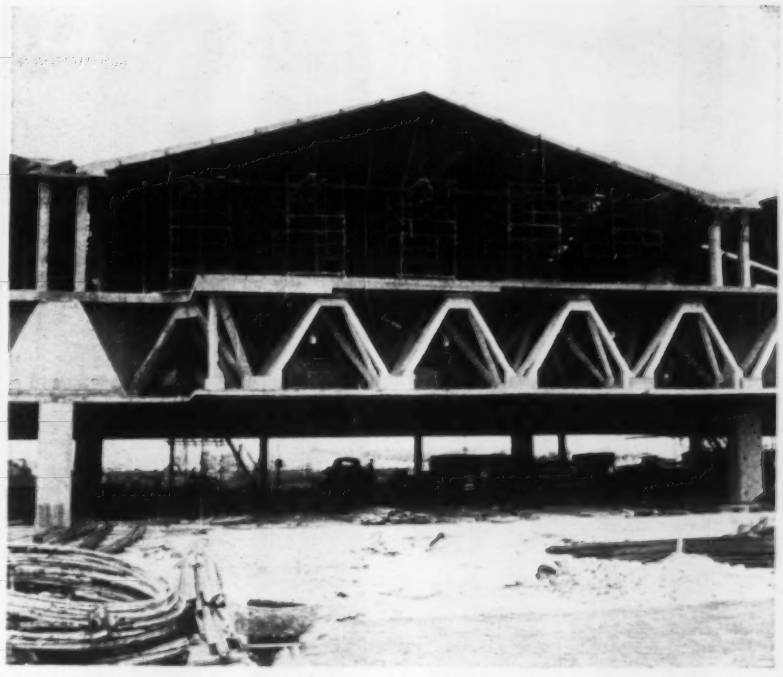
1. About 70,000 sq ft of manufacturing space, the so-called "snow-white area," which must be kept dust-free, must be maintained year 'round at 78 F and close to 20% relative humidity.

2. Another 100,000 sq ft of manufacturing space and 96,000 sq ft of office and engineering space had to be air conditioned for comfort, 78 F and 50% relative humidity.

The air-conditioning system had to be sized for large heat gain. The plant contains heat-generating equipment, such as alloying furnaces that require hydrogen burn-off and small fusing furnaces. In addition, some shops have a power consumption of about 200 watts per sq ft.

• **Flexible air conditioning**—Three 400 ton capacity centrifugal, hermetically sealed compressors were installed to meet initial needs, and space was allotted in the equipment room for an additional unit to provide for future expansion of the building. Chilled water

CASTING YARD turned out precast diagonals for the truss in the shape of an inverted V. These units then were joined at the base of the V to make 4-legged frames.



SPACE TRUSS consisting of precast concrete diagonals, second-floor slab and first-story ceiling slab provides a plenum for air-conditioning equipment.

Air Equipment

at 42 F is piped to 106 air-handling units for cooling the air, which is then distributed through a high-velocity duct system.

The air-handling units take return air, refilter it, mix it with fresh air, then discharge the mixture into supply ducts. The number of these 4,000 cfm units used to feed air to a 4,000 sq ft bay was varied according to load requirements.

To meet the owner's need for flexibility, the units had to be located to supply air to both the first and second stories. Also, they had to be installed so that they could be moved easily to adapt to changes in occupancy and load requirements. Besides, the owners wanted a system that would not have to be shut down when changes are made in the assembly line, as might happen if air were supplied through ceiling ducts.

These considerations led to a decision to place the air-handling units and ductwork in a plenum between the first and second stories. The plenum also could be used for piping and electrical wiring. Vertical distribution of air could be achieved by ducting it through hollow columns. And return air could be circulated back to the air-handling units through the plenum.

TETRAPODS formed by interlocking inverted V's were rolled onto the ceiling slab, where their dowels were welded to steel gussets embedded in the slab.

• **Space truss**—At first, the designers considered a 4 ft high space frame, with concrete slabs at top and bottom to form the plenum, carried on several rows of columns. But when they studied the requirements for air conditioning and the "snow-white area" more closely, they realized that more space would be needed. (Air from the snow-white area must be dehumidified and filtered before going to the air-handling units and recirculating.)

In the final design, the plenum was given a clear height of about 8 ft. It was then apparent that the space truss, with its 9 ft depth, would make interior columns unnecessary in the first story. The column spacing was set at 63 ft to meet assembly-line requirements.

The second-floor slab is 6 in. thick and the ceiling slab, 5 in. thick. Both are made of 4,000 psi lightweight concrete. The bottom slab was prestressed with curved, overlapping six-wire cables.

Reinforced concrete diagonals frame between the slabs. In addition, solid webs, or yokes, were cast in place above the first-story columns, to resist the tensile forces in the top slab. The yokes are seated on a 5 in. thick concrete pad,

SAVE
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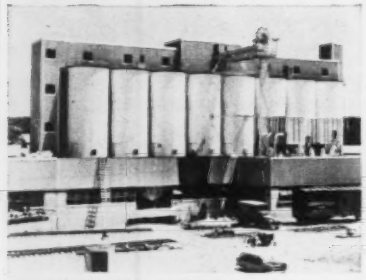

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Conveyors, feeders, discharge systems or other specially designed equipment save material handling time and speed-up your operation. Whatever bulk material you use, you can depend on Marietta's know-how to design and erect the most efficient system for your need. The complete job will be handled under one cost-saving contract or in cooperation with your engineering staff, consultants or contractor.

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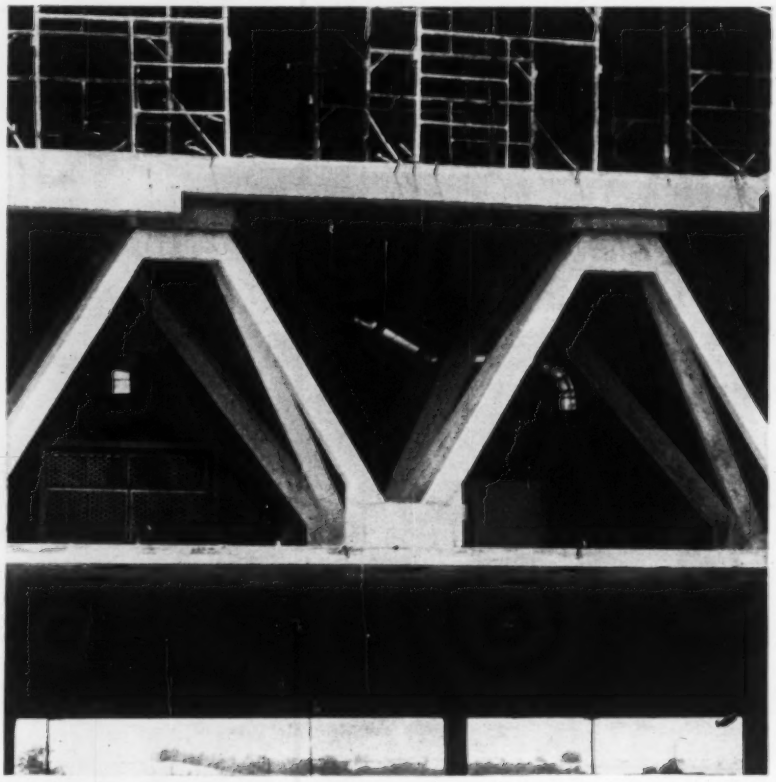
. . . Space truss creates plenum for air equipment



PLENUM between first and second stories houses 4,000 cfm air-handling units, which filter return air and mix it with fresh air.

which gives added strength to the bottom slab and serves as anchorage for the slab tendons.

• **Prefabricated web**—The diagonals, made of 5,000 psi concrete, were precast on the site. They were produced in pairs, joined together at the top to form an inverted V. Two pairs were then interlocked at the top, making a four-legged frame.

Picked up on a steel frame atop a dolly, this tetrapod was rolled to its position on the cast-in-place ceiling slab before formwork was erected for the second floor. To connect the diagonals to the slab, dowels protruding from the base of the tetrapods were welded to cross-shaped steel gussets, which were embedded in the slab. These gussets were made up of four angles.

Dowels projecting from the top of the tetrapods were welded to steel gussets that later were embedded in the second-floor concrete. Ninety diagonals and four yokes were required per bay.

• **Doubly curved roof**—Second-story columns are located above the yokes. Four columns, each 11 in. square, support a 60 ft square unit of the doubly curved, thin-shell concrete roof at its low points. (Spaces between adjoining columns were enclosed with insulation board to form vertical ducts.)

Each roof unit is composed of four hyperbolic paraboloids, which are joined at the top to form straight ridges. Having a 9½ ft rise, the shells are 3 in. thick, except at edges and ridges, which range in thickness from 5 to 9 in. Atop them are 1½ in. of glass-fiber insulation and builtup roofing.

Ties consisting of 12-wire strands were connected between the low points of each roof unit to take the lateral thrust. The ties were tensioned before the falsework supporting the cast-in-place roof was removed. A 2½ ft space between roof units was available for operation of the stressing equipment. This space later was filled in with insulation board.

O'Neil Ford and Sam Zisman of San Antonio, Richard Colley of Corpus Christi and A. B. Swank of Dallas were the architects. Robert E. McKee General Contractors, Inc., of Dallas, was the contractor. The air-conditioning system was designed by Thermotank, Inc., Detroit, Mich. For Texas Instruments, Inc., Jim McDade, chief industrial engineer, and Fred Snyder, supervisor of plant layout and facilities, supervised design and construction.

A New "FIRST" on New York's Skyline!

Deering-Milliken & Co. Inc. Building, New York City's first machine-applied direct-to-steel fireproofing job. Architect: Carson & Lundin, New York, N.Y. General Contractor: Turner Construction Company, New York.

Zonolite and modern plaster machines were used to fireproof steel floors and beams. Plastering Contractor: E. B. Carley & Company, Jackson Heights, New York.

Zonolite is tops with plasterers. "I use Zonolite wherever vermiculite is specified," says Plastering Contractor E. B. Carley, above left, talking to Zonolite representative. "Zonolite is always absolutely uniform, sure to do the best kind of job."

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In the new Deering-Milliken & Co. Inc. Building, Zonolite vermiculite fireproofing was "machine-gunned" directly to the underside of steel floor decking for fire protection. It's the first job of its kind in New York.

Zonolite and the machine technique made it feasible to achieve substantial savings in time and materials. Other benefits of this new technique: Reduction in floor height; ease of tenant and mechanical changes; 4-hour fire protection. Zonolite and the speedy plaster machines were hailed as "accelerators in the coordination of the trades"—a further contribution to over-all efficiency and economy.

What happened in New York is happening in many other cities, as architects and engineers make use of new Zonolite direct-to-steel fireproofing. Get the whole Zonolite story! Tear out the coupon.

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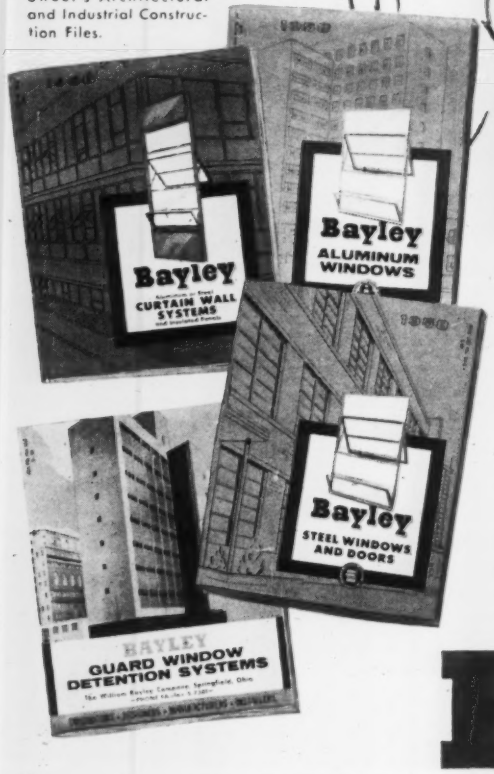
THESE FOUR CATALOGS show how Bayley can work with you on both steel or aluminum windows and curtain wall systems for buildings of all types. Copies will be gladly sent on request—or see Sweet's Architectural and Industrial Construction Files.



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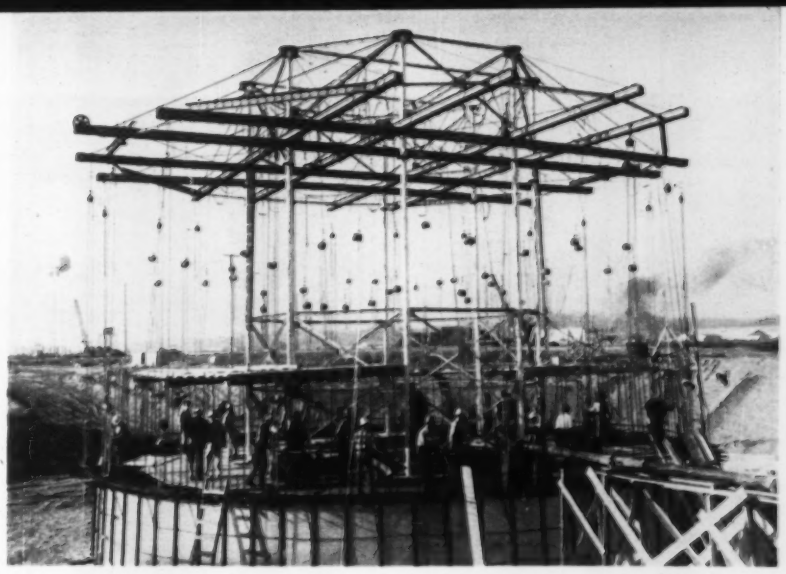


All-aluminum derrick was designed by a contractor to facilitate erection of a tall chimney. As work progressed, stack forms, inside working platforms and the derrick itself, were raised by manual operation of chain falls hooked to trusses above.

Frame "Bootstraps" Forms 613 Feet Up

An all-aluminum derrick was used in the "bootstrap" erection of a 613-ft-high reinforced concrete chimney in West Virginia.

The Rust Engineering Company of Pittsburgh, Pa., builders of the huge structure decided to make the derrick of aluminum rather than wood because of its unusually large size and because it had to be raised manually as the work progressed.

The stack, on which the novel derrick was used, was erected for the Ravenswood Works of the Kaiser Aluminum and Chemical Corp. It carries into the upper air the gases from the pot rooms where electrolytic reduction of alumina takes place.

The chimney has an outside diameter at the base of 60 ft. At the top, its diameter is 35 ft. Its wall varies in thickness from 24 in. at the bottom to 10 in. at the top. A total of 5,500 cu yd of concrete and 244 tons of reinforcing steel were used in its construction.

Its octagonal foundation, set 20 ft below the ground level, is 104 ft across, weighs 3,750 tons, and has over it more than 5,000 tons of earth backfill. The shaft above the foundation weighs 7,703 tons, making the total weight of the structure 11,453 tons.

In the erection of the chimney, the eight-post aluminum derrick, a central working platform and the wall forms initially were set on the completed foundation. The inside form panels were in two parts, each 30 in. wide and 4 ft high. The outside forms consisted of rectangular sections 30 in. wide and 8 ft high interspersed with tapered form sheets of the same height. Also included were two "overlap sheets" which were adjusted after each lift and bolted together to give the form the exact diameter required for the next lift.

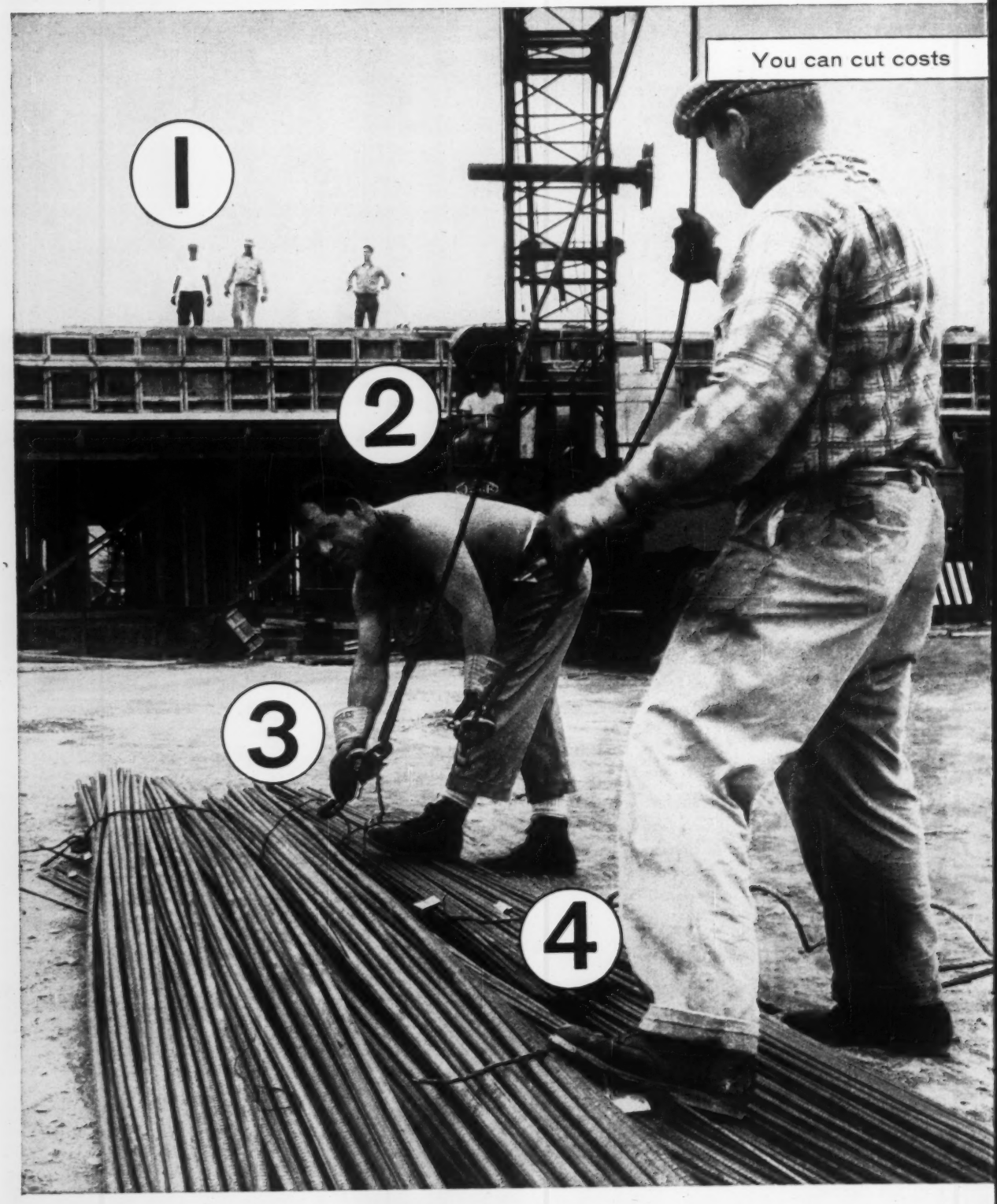
Each lift was 7.5 ft high. When the concrete in a lift had attained sufficient strength, the derrick was raised for the next one, taking up with it the steel forms and the inside working platform. The entire assembly was supported and raised by manually operated chain falls attached at the bottom to ring angles set on the concrete of the previous lift, and at the top of the trusses of the derrick

Concrete was brought up to the forms in 5 cu ft buckets controlled by two high-speed hoists working through sheaves hooked to the trusses.

Erection of the big chimney was completed in 60 weeks.

STACK AT 120 FT, canvas protects both workmen and fresh concrete from weather.

MASSIVE CHIMNEY completed stands 613 ft high and weighs about 11,400 tons.



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This routine job could cost lives– cut profits if...

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2. The load lifts the formwork
3. The load becomes unbalanced
4. The bundling wires open

Slinging a load is an everyday operation on many construction projects. But as any successful contractor knows, even on routine jobs, accidents can seriously injure men—and cut profits!

On routine or difficult jobs, AM men can help the contractor set up a safety plan to prevent costly accidents and job interruptions. Starting with the blueprints, the AM Safety Engineer gets together with the contractor and his job superintendent to find the way to complete the project with the greatest safety, speed—and profit. As a result of this teamwork, workers are guarded against hazards . . . construction and insurance costs are lowered. Should an accident happen, other AM men promptly and justly settle claims . . . and return the injured to work in the shortest possible time.

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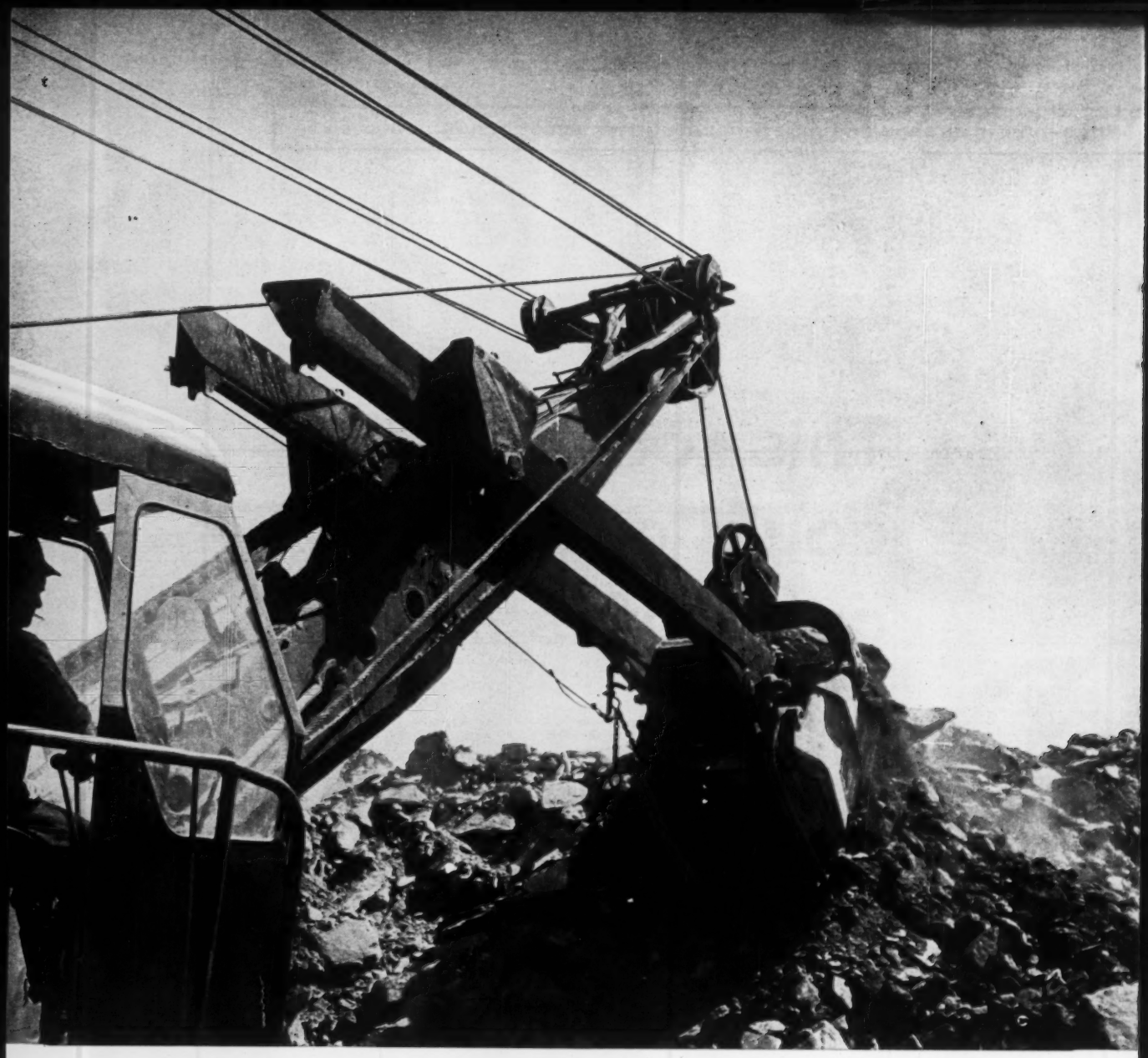


WIRE ROPE AT WORK

This hungry shovel, doggedly eating away at a steep embankment, thrives on a diet of dirt and rock. While working in the vicinity of York, Pennsylvania, it scooped out an average of 2,000 cu yd per day with its 3½-yd dipper. The job: preparing right-of-way for a new express route between York and Baltimore.

In places a deep cut was required, and the digging had to proceed at a steady pace, free of interruptions. The contractor, J. Robert Bazley Inc., guarded against wire rope failures by rigging the shovel with Bethlehem Purple Strand. This tough wire rope was furnished in the 6 x 25 construction for both hoist and boom lines. As always, its high strength and durability were important factors in keeping the shovel going full-tilt.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

Big Axe Makes Short Work of Stumps

Land grubbing is an easier, faster and cheaper, as well as less troublesome, operation with the new shovel-mounted stump axe recently made available to contractors. Efficiency of the new tool was demonstrated last month as the manufacturer, M. J. Bles Construction Co., removed under subcontract some 3,000 green stumps up to 6 ft in diameter at an estimated cost saving of 75% over conventional methods. And the stumps stood a foot or less above ground, instead of the two to four ft the axe could more easily handle.

The Bles Stump Axe, as it is called, is an all-steel attachment mounted on the front end of a shovel or crane, preferably of ¾ yd size. It consists of a 2-in.-steel pivoted arm, 11 ft long. This is hung from a 20 ft welded boom built up of two box girders with 1 in. side plates having a minimum depth of 24 in.

The lower half of the pivoted arm is a blade with a 5 ft long curved cutting edge, hard-faced with welded-on cutting steel. A hand grinder and generator supplied with the axe are used to sharpen the blade twice a day.

Operated like a backhoe, the axe slices stumps downward from the top, although it can also cut upward from the bottom with a little less ease. Under the heavy pressure on the cutting edge, the axe slices off vertical segments of the stump to any thickness desired. At the end of the cutting stroke, a triangular horizontal plate welded to the bottom edge of the axe enables it to lift the severed segment and attached roots out of the ground.

As the piece is pulled up, the soil is free to flow back into the hole, leaving only a relatively small depression to backfill. This added advantage is followed by that of easy burning of sliced rather than solid stumps.

In the hands of all kinds of operators, the stump axe averaged at least 80 stumps a day at the clearing site. In the hands of an expert operator, the rate jumped to 125 a day with stumps of 6 ft dia coming out in 5 to 10 min and 3 ft ones split and pulled in 2.5 to 3 min.

The complete axe and boom rig, patent pending, sells for about $5,000, with shipments cited as 30 days after receipt of order. M. J. Bles Construction Co., McLean, Va.

(*New Products continued on page 56*)

CURVED PART of pivoted arm is stump-slicing hard-faced cutting edge for new stump clearing axe that works like a backhoe.

SPLIT SEGMENT of stump is lifted out with roots attached allowing soil to fall back.

the one

SOLUTION

for all these construction problems...

CRACKS IN CONCRETE SLABS AND PATIO — Thompson's Water Seal helps prevent cracks, stains and dusting because it penetrates deep for hard water-repellent surfaces that are smooth and evenly cured.

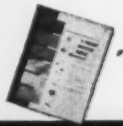
SEEPAGE IN CONCRETE BLOCKS — Thompson's Water Seal puts a deep-penetrating seal into concrete blocks to help maintain texture and color and to protect for 5 years or more against moisture seepage, leakage, stains, paint blistering and peeling.

JOB FOULED UP BY MOISTURE — unlike surface-coaters, clear, colorless Thompson's Water Seal gives all porous materials a deep-penetrating seal for 5 years or more against moisture, alkalies, salt water, many organic acids — particularly valuable for door and window sections, masonry, plywood, basements, retaining walls, stucco.

EXTERIOR SIDING WARPS AND CRACKS — Thompson's Water Seal penetrates deep into wood fibres — gives exposed structures protection for 5 years or more against weather and moisture that often cause warping, swelling, checking and grain-raising right on the job.

NEW BOOKLET WITH COMPLETE SPECIFICATIONS —

contains Thompson's Water Seal end-use specifications for porous materials in building and maintenance applications... and for TWS use with paints, floor hardeners and Thompson's Waterproofing Redwood Stain.



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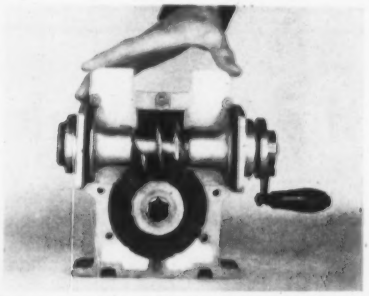


SCREW AND ROTATING PLATE produce what is called a pulseless action.

English Pump Adapts Archimedes' Screw

By adapting the "screw" of the Archimedian lift pump of antiquity, Goodyear Pumps Ltd. of England has produced an exceedingly efficient small pump. It is a positive axial-flow unit employing a screw (rotor) which engages with a rotating plate to produce a pulseless action. The rotor and plate wheel are the only moving parts and since the rotor spins on its own true centers there is said to be no tendency to roll around and rub against the rubber stator.

Mechanical face seals running on ground and lapped faces, completely seal the shaft. All engaging surfaces are rubber to metal, fluid lubricated.

It is said the pump can tackle air and liquid in any proportion and run continuously on "snore", while its positive action and low fluid velocity enable it to deal with thick and viscous fluids.

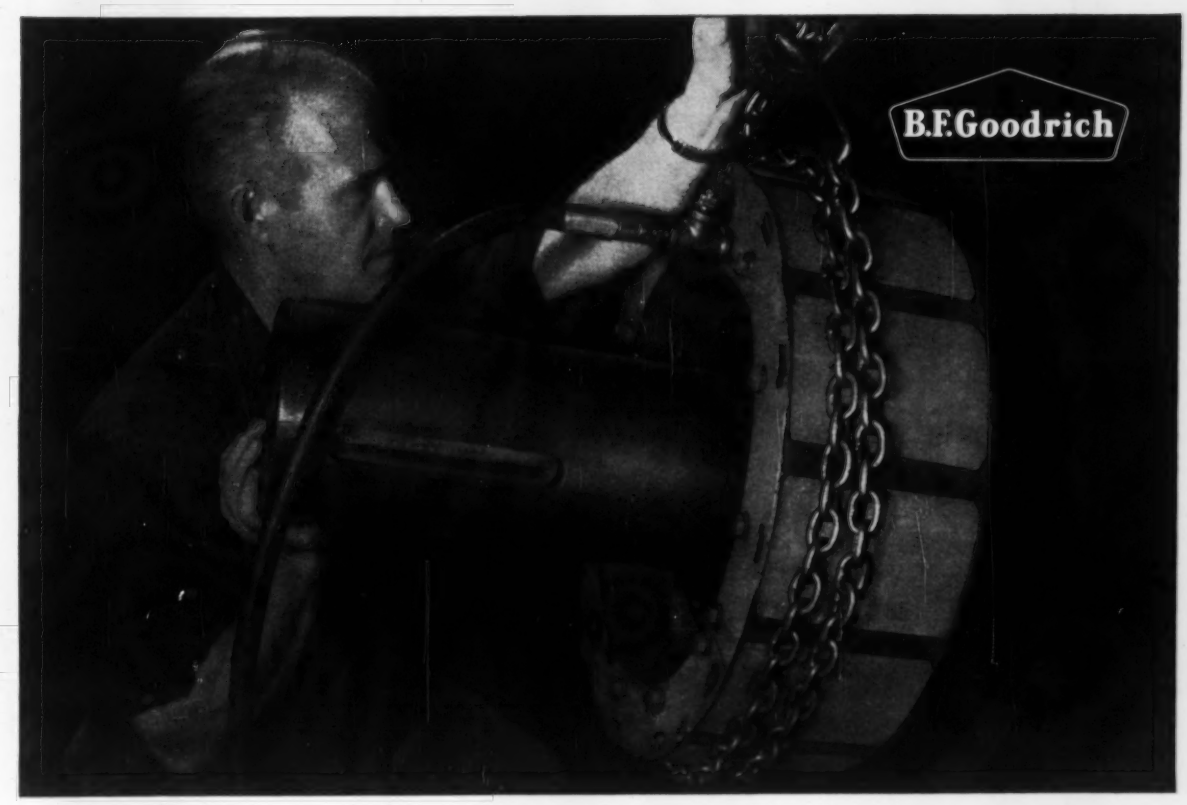
Three pump sizes, 1¼, 1½ and 2½ in. requiring movers of from ¼ to 16 hp cover a range of outputs from 4½ to 167 gpm against heads of from 50 to 200 ft. The 1½ in. pump which measures 8 x 4 x 9 in. can deliver 31 gpm against a 200 ft head at 3,000 rpm requires a prime mover of 3.1 bhp. According to the manufacturer, pumping efficiency of this unit is an amazing 61%.

The inventor of the pump is James W. Goodyear. It has been tested for 2 years. GOODYEAR PUMPS LTD., CAMBORNE, ENGLAND.

Heavy-Duty Diesels Give Flexible Service

Two new diesel engines are designed to serve a wide range of power requirements in construction.

The high-torque engines provide a steady horsepower output at 1,000 to 1,800 rpm. The D-344 is a four cylinder 88 hp unit, while the D-516 is a six-cylinder, 131 hp engine. ALLIS-CHALMERS MANUFACTURING CO., TRACTOR GROUP, MILWAUKEE, WIS.



New B.F.Goodrich Hi-Torque Brake STOPS TWICE AS FAST

Continental-Wooldridge self-propelled Dumper and Scraper Models CWD-214, CWD-321, CWD-221, CW-215, CW-220, and high-capacity tractor-drawn Scrapers, have capacities up to 30 yards struck and 39 yards heaped. 22" x 7" B.F.Goodrich Hi-Torque Brakes provide maximum stopping power.

HERE'S THE ONLY heavy duty brake that will give you the reserve stopping power you need for today's new, larger off-road equipment. In one operational test, the B.F.Goodrich Hi-Torque Brake stopped a popular 24-ton capacity truck at a rate of 18 Ft/sec^2. This same truck, equipped with conventional two shoe brakes, achieved a deceleration rate of only 7 Ft/sec^2.

Full circle stopping power is the main reason for the superiority of the B.F.Goodrich Hi-Torque Brake. Its exclusive design gives more lining contact area than any other drum brake. An hydraulic expander tube actuates each of 12 shoes—allowing them to follow drum eccentricities with equal lining pressure. This gives a smoother, faster, safer stop with much less chance of fade.

What is even more important to most operators, the B.F.Goodrich Hi-Torque Brake is easy to service. It requires no lubrication—and lining changes can be made with standard hand tools. On many jobs where ordinary brakes require excessive down time, the Hi-Torque Brake will let you operate with *no* down time.

Find out how your operators can speed up cycle time and still maintain better braking control. Free booklet—The B.F.Goodrich Hi-Torque Brake—gives specifications and test results. Write B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Troy, Ohio.

B.F.Goodrich Hi-Torque brakes

TRU-LAY *flexible* PUSH-PULLS

FOR

Remote Control Jobs on a great variety of Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers and other construction equipment.

These dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances, up to 150 feet or more.

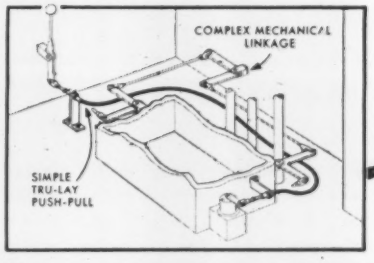
TRU-LAY PUSH-PULLS are dependable and accurate even under the most adverse conditions

They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls increases ease of operation and means the virtual elimination of maintenance.

Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below

Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



"Solid as a rod but *flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

Our ***DATA FILE*** *will answer your further questions*
Write for a copy without obligation

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AMERICAN CHAIN & CABLE

601-F Stephenson Bldg., Detroit 2
2216-F South Garfield Ave., Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

Publications

Tractor scrapers—A 24 page, four-color catalog describes the Models 110, 210 and 310 tractor scrapers. Illustrated, the catalog highlights design and operating features. CONSTRUCTION MACHINERY DIV., CLARK EQUIPMENT CO., P. O. BOX 599, PIPESTONE ROAD, BENTON HARBOR, MICH.

Crawler tractor—A bulletin describes improvements in the OC-4 crawler tractor and the OC-46 loader. THE OLIVER CORP., INDUSTRIAL DIV., 19300 EUCLID AVE., CLEVELAND 17, OHIO.

Protective coating—LL-4874 is a 4 page technical data bulletin describing use of heavy duty coating for protecting asphalt, concrete and metal. Brief specifications and suggestions for use are included. MAINTENANCE, INC., WOOSTER, OHIO.

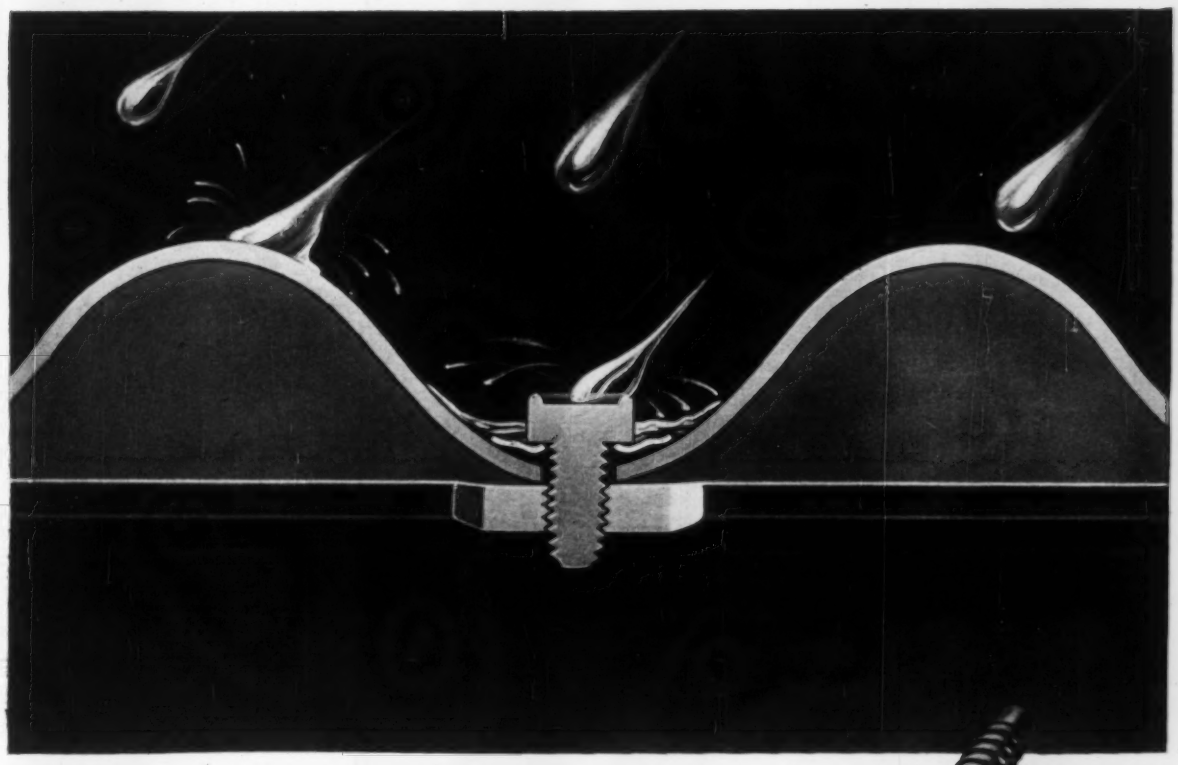
Pipe coupling—A six-page illustrated bulletin describing the "Vic-Easy" method of quick-coupling lightweight pipe or tubing is available. Installation and operating features are detailed, explaining how the use of lightweight pipe with roll-grooved ends affects costs, and illustrates typical applications in oil fields, mining and construction.

It discusses the extended size range of the lightweight steel and aluminum pipe, now furnished with roll-grooved ends by several pipe manufacturers in diameters down to 1¼ in. OD. VICTAULIC COMPANY OF AMERICA, U. P. BOX 509, ELIZABETH, N. J.

Vibrators—Illustrated, a 12 page booklet contains data and specifications for 14 standard vibrators to handle bulk materials. Schematics and information on accessories are included. SYNTRON CO., 328 LEXINGTON AVE., HOMER CITY, PA.

Glass block—The 1958 catalog describing Owens-Illinois glass block includes instructions and construction details both for large and small-size panel installations in steel, wood and masonry framing. It also contains dimensional tables, data on solar heat control, fuel savings and reduction of surface condensation. KIMBLE GLASS CO., TOLEDO, OHIO.

Distribution equipment – Low-voltage distribution equipment and components manufactured by the circuit-protective devices and distribution assemblies departments of General Electric Co. are described in a 144 page, 1958 general catalog. DISTRIBUTION UNIT, GENERAL ELECTRIC CO., PLAINVILLE, CONN.



NEW SPIN-SEAL* SCREWS GIVE LEAKPROOF FASTENING

on flat and corrugated roofing and siding materials

THESE NEW, leakproof fasteners combine a patented washer and built-in sealant with a standard screw to provide permanent, weather-tight connections in sheet material construction.

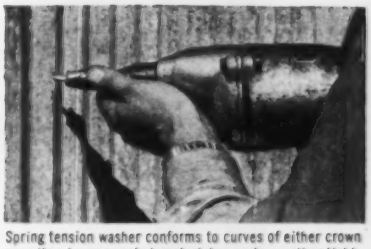
Three-way seal — Tightening the RB&W "SPIN-SEAL" screw forces the flow-in sealant into spaces around the (1) head, (2) threads and (3) clearance hole, hermetically sealing the opening *three ways*. The concave, springy washer confines and controls the flow of the sealant and provides an *additional* spring tension seal. On corrugated surfaces, the washer conforms to the curve of either crown or valley, giving leakproof protection against wind driven water and hydrostatic pressure.

Permanent gasket — Compound is plastic, rather than elastic. Stable and non-aging, it won't split or ozone-check under pressure, is unaffected by industrial atmospheres.

Won't gouge finish — Since the washer does not turn with the screw, finished surfaces are not damaged during installation. Nor is there any twisting or damage to sealant.

Standard styles — "SPIN-SEAL" fasteners are available in all standard tapping screw styles except flat head, for use with such materials as corrugated steel, asbestos-cement sheets, plastic, glass fiber, aluminum and porcelain enameled panels.

Send for new bulletin, SS-1. It gives full information on "SPIN-SEAL" fasteners. Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, New York.



Spring tension washer conforms to curves of either crown or valley in corrugated materials: seals weather-tight.

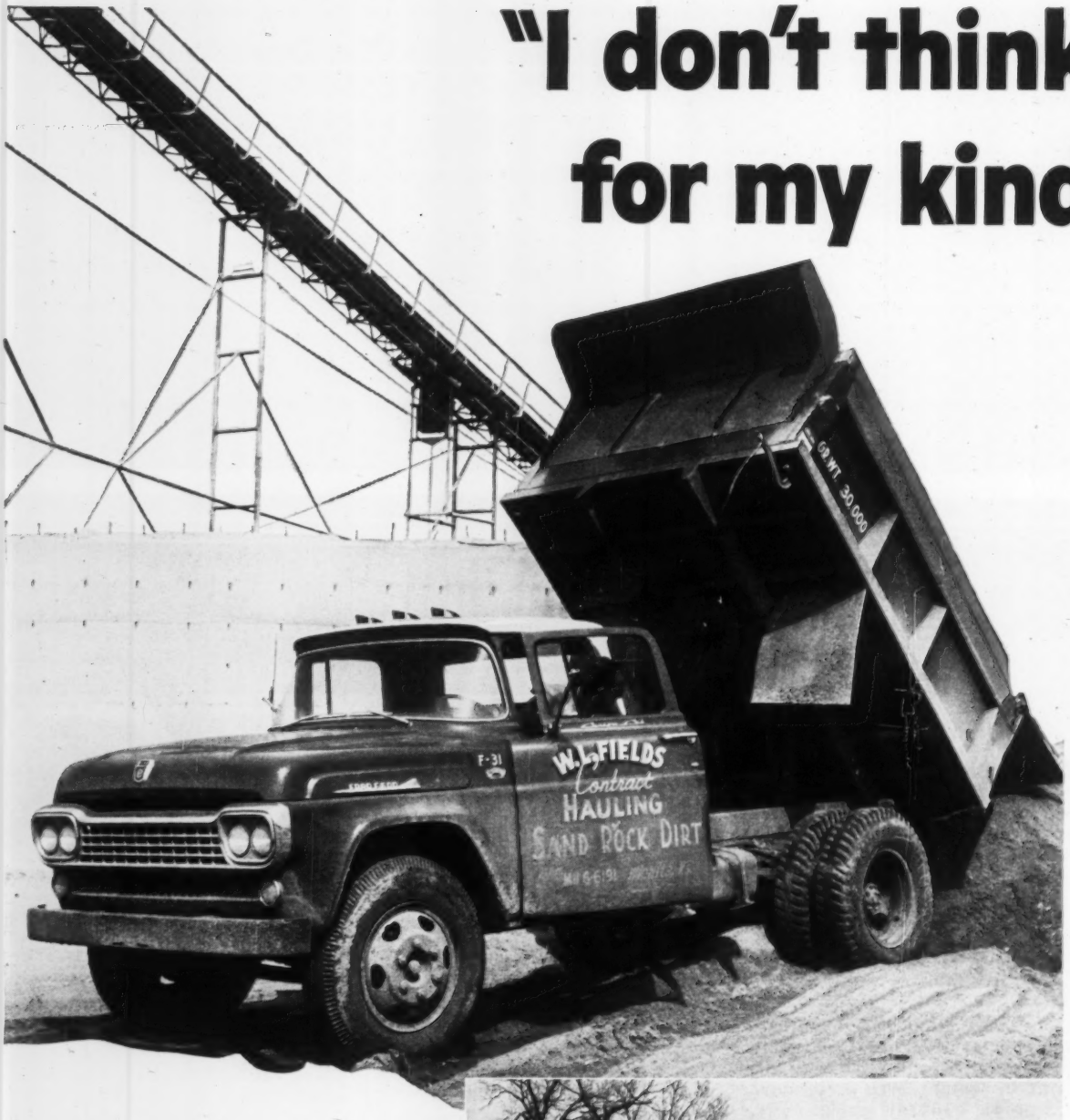
*T.M.

RB&W

113th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

"I don't think for my kind



Official registrations show...

AMERICAN BUSINESS BUYS MORE FORD TRUCKS THAN ANY OTHER MAKE!

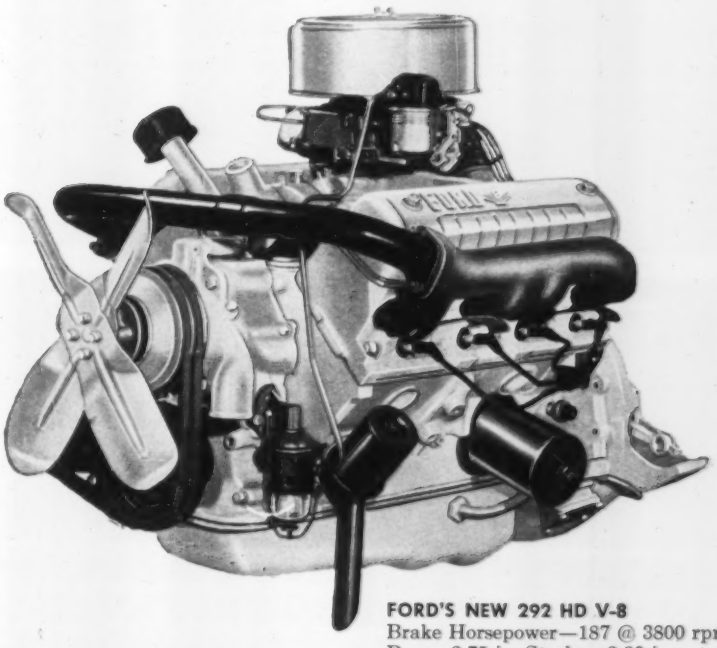
FORD TANDEM with 10-yard dump body and new F-600 with 5-yard dump . . . part of Mr. W. L. Fields's Ford Fleet.

there's a tougher truck of work"

says W. L. Fields
Contract Hauler, Wichita, Kansas

"And they cost less to operate than any trucks we've ever owned!

"Our 13 Fords are mostly two-ton dumps. They haul 6 yards of rock and sand, averaging about 7½ miles per gallon of gas. We get 6 mpg with Ford tandems carrying 14 tons. And they all really hold up. Ford's Heavy Duty V-8's are good for an average of 75,000 miles before an overhaul! We have a '55 Ford with over 150,000 miles on it, and I'll bet there's not another dump truck around here that's in such good shape."



FORD'S NEW 292 HD V-8
Brake Horsepower—187 @ 3800 rpm
Bore—3.75 in. Stroke—3.30 in.
Displacement—292 cu. in.

Whatever your business . . . there's a FORD truck for your special needs

Official registrations for 1957 show that *American business buys more Ford trucks than any other make.* There are many reasons for this popularity . . . many reasons for *you* to make your next truck a Ford!

Ford trucks are your best buy, too! Ford's initial costs are *low* and resale value is traditionally *high*. Modern Ford Styleside pickups, for instance, are the lowest priced with full cab-wide body . . . giving you 23% more loadspace than any traditional type pickup box.

Only Ford offers the economy of Short Stroke power in all engines, Six or V-8. And Ford's Heavy Duty V-8's offer new, advanced durability features. Ford's rugged cab and chassis construction means these new '58s are built to last. All this plus the proven fact that Ford trucks last longer adds up to America's No. 1 truck value.

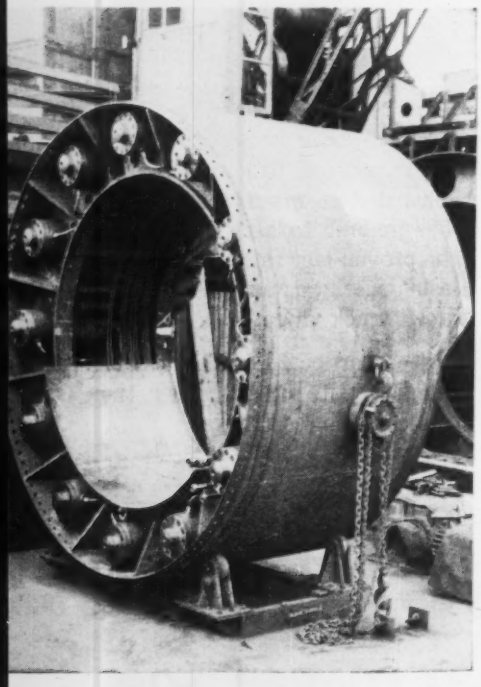
See your local Ford Dealer for the latest in '58 trucks or the best in A-1 used trucks.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

JACKS react against liner segments and digging shield. Jacks are mounted on . . .

REAR OF DRUM whose leading face (right) carries cutting teeth assembly.



Liner Rings of Concrete

A radically new tunnel lining that eliminates bolting and grouting is being used to speed the driving of a deep 10 ft dia water tunnel through London's blue clay strata. Additional aids on this project include a specially developed digging shield and an optical alignment system.

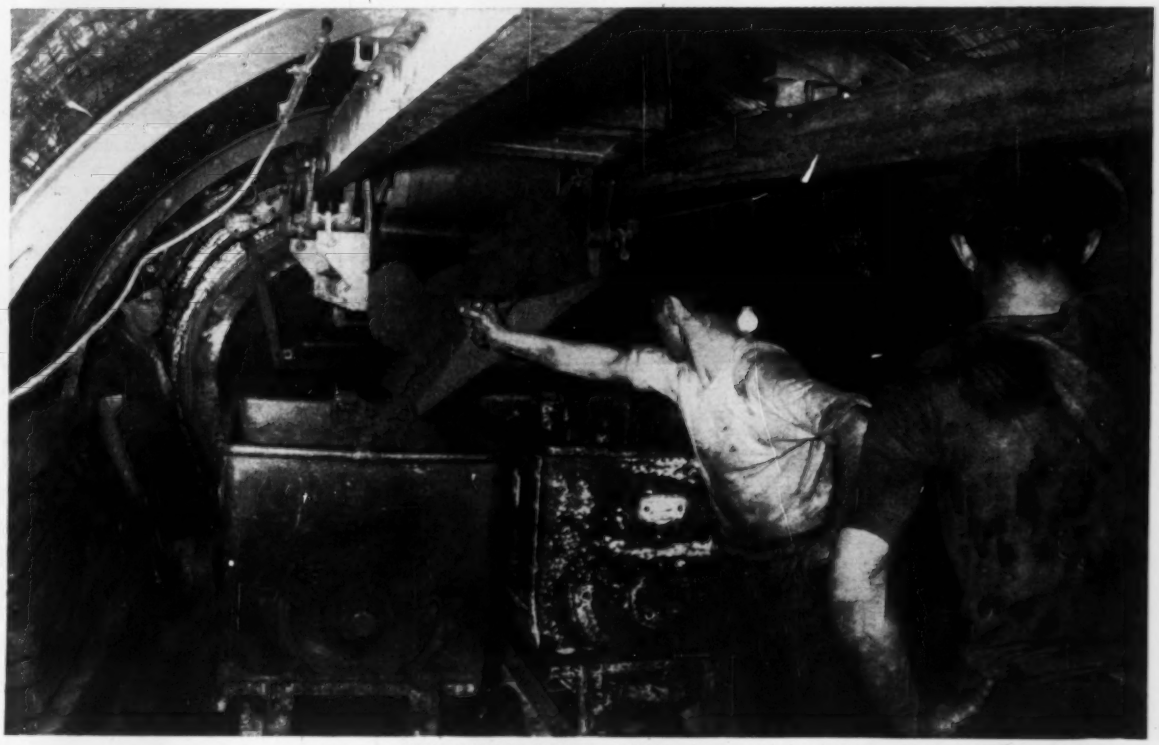
The precast concrete lining is laid in 2 ft. elemental rings, each made up of 12 wedge-shaped, interchangeable segments. The rings are keyed solely by the wedge action of the segments when expanded into the earth by the digging shield. The wedges will be given a ½-in.-thick concrete coating when their placement is completed.

As 12 hydraulic rams mounted on the rear face of the shield react against the segments, the shield is advanced forward. After advancing the drum one ring length, the jacks are retracted and new segments located loosely (the overhead segments are supported by retractable bars carried from the shield). Each jack can be independently extended against its associated segment. As the segments close axially between the rams and the preceding ring, the wedge action expands the whole ring into the earth. The shield and the expanded ring have the same diameter—the rings are locked in place by shrinkage of the unsupported clay bore.

Each segment is tapered axially, and the sliding faces therefore are skewed. Tolerances on these faces are critical and the blocks are manufactured in granite molds which have tolerances, of 0.003 in. The wedge faces are lubricated with bitumen.

Concrete used is a 4½ to 1 mix. Sulphate resistant portland cement is used with three parts ⅜ in. aggregate and 1½ parts sharp sand. Each block is tested to 6,000 psi.

• **Mining machine**—The digging shield—developed to combine the functions of digging and expanding the segments into position—is the smallest used in Britain. Space restrictions led to major departures from earlier shield design. Foremost is the use of a cutting drum



CONVEYOR DUMPS MUCK into cars behind digging unit. Conveyor extends thru rotating drum and receives muck scooped up by paddles on the drum behind the . . .

Wedges

CUTTING EDGE which consists of two diametrical bars holding radially dispersed cutting teeth. The 10 ft dia tunnel is being dug through soft clay and chalk.

driven through a ring gear by two sets of diametrically opposed, 30 hp hydraulic motors.

The power sources, a 120 hp electric motor and a 2,000 psi hydraulic pump, are mounted remotely at the rear of the moving platform.

The leading face of the rotating drum carries two diametrical cutting arms on which the teeth are radially dispersed. The drum floats on roller races at each end and is rotated between 1 and 4 rpm by the geared hydraulic motors symmetrically disposed about the ring gear. The drum can be revolved clockwise or counter-clockwise.

Scoops and paddles in the drum load a conveyor which reaches from the cutters, through the drum, to wagons wheeled up to the rear face of the shield.

The earth handling problem is solved by use of an articulated platform, 180 ft long, which advances with the shield. This platform carries the loading and unloading railway turnouts (2 ft gage), ram pumps and motors.

(Continued on page 64)

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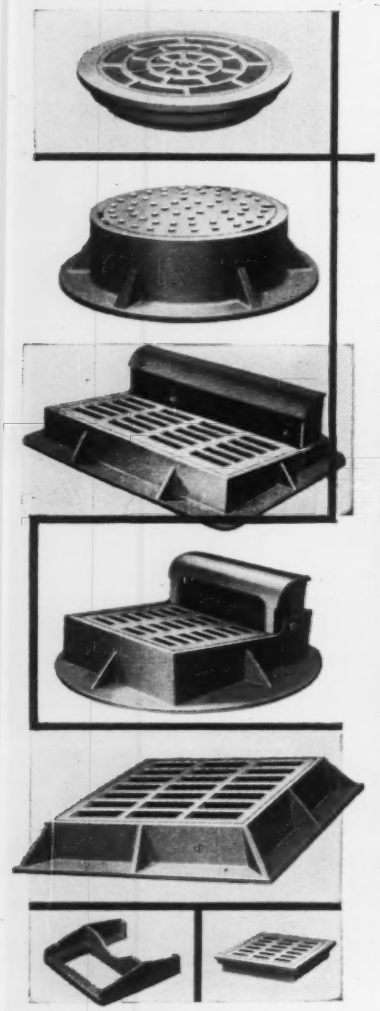
of sound quality... solid value



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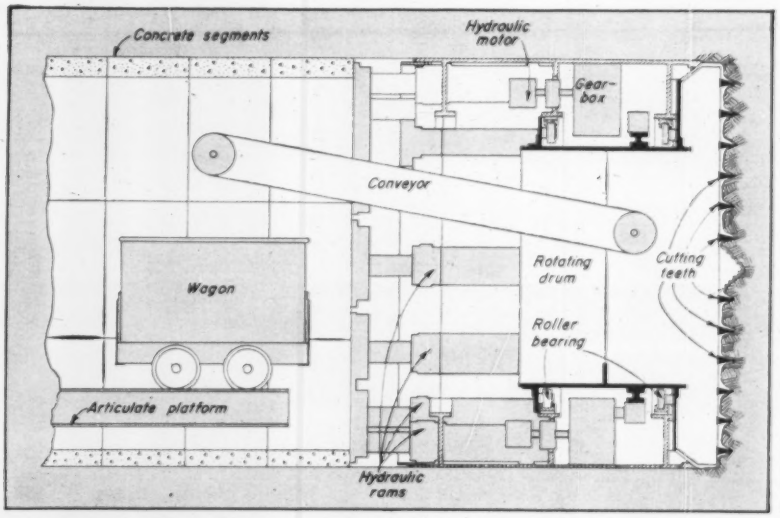


DIGGING SHIELD is highly compact to fit restrictions of a 10 ft dia tunnel. Cutting drum is driven by two 30 hp hydraulic motors. Paddles are mounted on drum behind teeth.

OPTICAL ALIGNMENT system allows unskilled crews to check line and grade.

WEDGE-SHAPED liner segments are made of 6,000 psi concrete.

Although the system is designed for soft tunneling in clays and chalk, the machine has excavated layers of large claystones successfully.

The digging shield, manned by five men, has been maintaining speeds of 280 to 300 ft per week—2½ ft per hour—of lined tunnel for the past 12 months. This rate is over twice that obtained with conventional bolted iron rings in driving London's tube railway system, and four times the rate achieved with comparable main drainage projects.

• **Optical alignment**—Optical alignment, used for the first time, allows unskilled digging crews to check line and level without technical supervision.

Two illuminated half-crosses are hung—100 ft apart—from the tunnel roof. On the shield, a mirror is mounted in the same relative position as the half-crosses. When the images of the half-crosses are viewed in the mirror they form a whole-cross whose position is compared with a graticule etched on the reflecting surface. Line and level deviations are read directly. Daily adjustment is made of the position of the mirror using plumb bobs to compensate for the slight "roll" progression of the shield due to the cutting reaction.

(*Continued on page 66*)

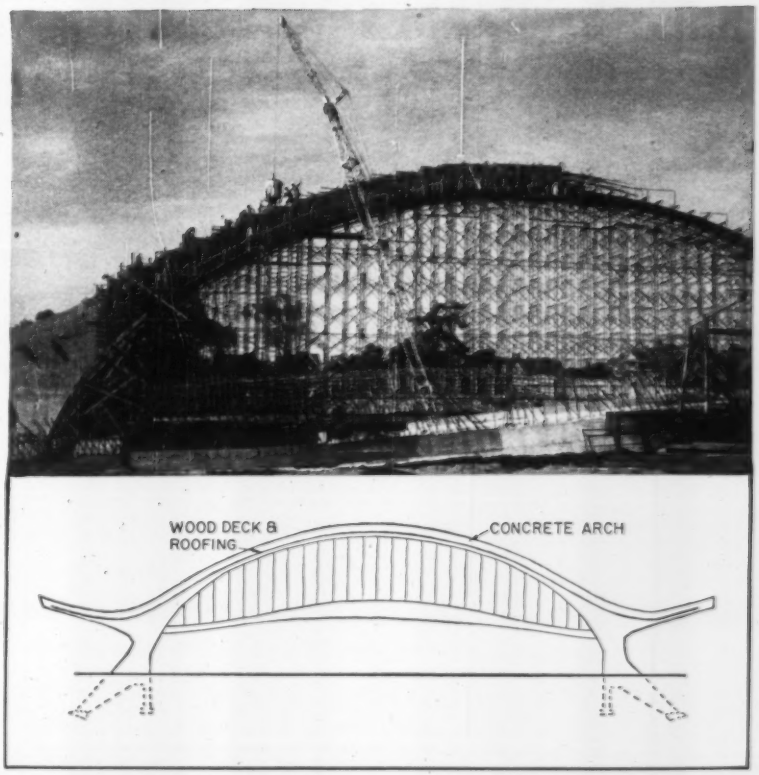
Shoring Methods . . . by Patent Scaffolding Co.

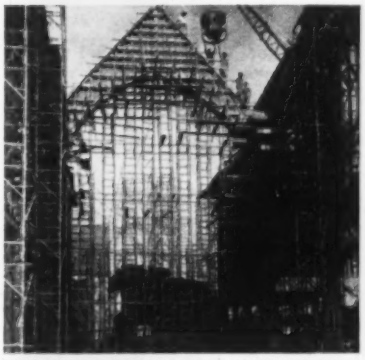
SAME COMPONENTS PROVIDE SHORING AND PLATFORMS; SPEED HUGE PARABOLIC ARCH

FOR BUILDING this huge, spine-like, 240′-long parabolic arch for the new, modern-design Yale University Hockey Rink, contractor, George B. H. Macomber Co., makes effective use of "Trouble Saver"® Scaffolding components for shoring and for working platforms.

2′-wide "Trouble Saver" Shoring units with built-in ladders support the area starting 21′ in from each end of the arch. For a distance of 32′ these units are placed 5′ apart, perpendicular to the arch length, with 6″ spacing between towers. The next 59′ is shored with 5′-wide "Trouble Saver" frames, spaced 3′7″ apart, parallel with the arch length, with 8″ spacing between towers. 475 5′-wide frames and 410 2′-wide frames are in use. Horizontal bracing is achieved by "TubeLox"® Scaffolding members and 56 steel cable guys.

A separate working platform, made of 285 5′-wide "Trouble Saver" frames, is used on one side of the arch only for easy placing and removal of forms. "TubeLox" Scaffolding members tie this working platform to the shoring for extra safety.





HIGH, HEAVY BEAM SUPPORT— Southern Bldrs., Inc., needs only 228 "Trouble Saver" Shoring ladder frames, braced with "TubeLox" Scaffolding members, to support this 50′-high, 8′-thick arched concrete beam for St. Marks Church, Shreveport, La. Built-in ladders provide quick access for workers.

QUICK, STRONG BRIDGE SHORING— Due to its high load-bearing capacity, "Trouble Saver" Steel Shoring permits Snitily Brothers, contractor, to get an entirely accurate camber section for this 2-arch (each 52′ long) underpass bridge on the new Peninsula Drive near Moses Lake, Wash. 396 shoring frames of various heights are erected quickly to support the slab thickness of 2′4″ at pier edges and 1′2″ at the 18′-high midspan points. By using versatile, prefabricated steel shoring, instead of wood, forming costs for highway bridges, overpasses and piers can be cut at least 25%. Highway Bulletin G208 gives complete facts, ask for it.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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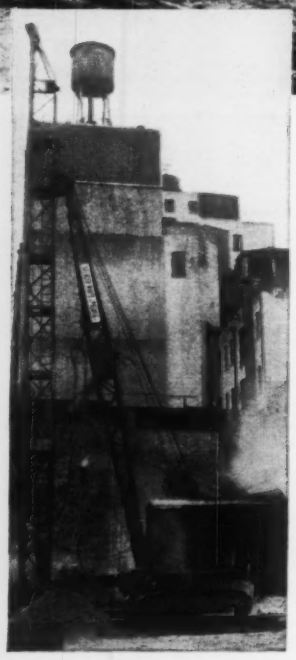

Project: Fashion Institute of Technology for New York City Board of Education
Architects: DeYoung, Moscowitz & Rosenberg, New York City
Engineers: Severud-Elstad-Krueger, New York City
General Contractor: Depot Construction Corp., New York City

Spencer, White & Prentis is equipped to give complete service in everything connected with foundation work. On this job, for example, we were called upon to:

- Drive 8, 10, 12 and 14-inch steel bearing piles to rock.
- Underpin 4 old buildings through wet running sand to rock, using Pretest cylinders.
- Install sheeting and bracing systems along buildings.

Wouldn't such an all-inclusive service be advantageous to you? It is based on close to 4 decades of experience, specialized personnel and all the necessary specialized equipment.

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. . . International

• **Nine miles to go**—The tunnel is the biggest part of a $15 million waterworks project to replenish the Lee Valley reservoirs at Chingford, with Thames River water from the Hampton area, some 24 mi away. These reservoirs, supplying eastern London, become seriously depleted during a dry summer.

Length of the tunnel section is 19 miles depth varies from 192 ft at Hampton intake to 67½ ft at the Walthamstow terminal shaft. Flow is by gravity up to the latter point, from there it is pumped to the surface and through 54 in. dia steel-lined pipes to the reservoir, 4½ miles farther. The gravity flow is 70 mgd, but it can be boosted by pumping to 125 mgd.

A total of 22 construction and ventilation shafts, 13 ft in dia, will be constructed about one mile apart. The Walthamstow shaft is 25 ft in dia to accommodate the pumps.

Tunneling work is progressing at different sections, using three hand-shields in addition to two mechanical shields, and the project should be completed next year. To date, about 10 miles have been completed. When all of the precast tunnel liner is in place, a smooth ½ in. concrete coating will be applied by continuous mechanical methods.

The contract was let in five sections. Four sections covered the tunneling phase, and three of these were awarded to Kinnear Moodie and Co. Ltd., who developed the digging shield and hold patents for the "Donseg" lining system, using wedge segments. Consulting engineers representing the London Metropolitan Water Board on the project are Sir William Halcrow & Partners.

World Quake Conference Set for Tokyo in 1960

Preparations are now being made in Tokyo for the Second World Conference on Earthquake Engineering in July, 1960. The University of California at Berkeley hosted the first one two years ago.

The meeting is being organized by the Japan Science Council. Collaborating groups include the Japan Society of Civil Engineers, the Architectural Institute of Japan and the Seismological Society of Japan.

At the conference, reports and papers will be presented on earthquakes, seismology and the theory and practice of earthquake-resistant construction.

Communications regarding the conference should be sent to Prof. Kiyoshi Muto, Chairman Preparatory Committee, Earthquake Research Institute, University of Tokyo, Bunkyo-ku, Tokyo, Japan.

How 6 contractors save with B.F.Goodrich tires

IN ILLINOIS—CKG Associates is at work on the Northern Illinois Toll Road near Elgin. The company operates 115 vehicles, uses B.F.Goodrich FLEX-RITE NYLON Rock Service, Tractor Grader, Earth Mover Traction, Rock Logger and All-Purpose tires. Excellent on-the-job service is one reason they prefer B.F.Goodrich tires.

IN WASHINGTON—"We switched to B.F.Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Richard M. Ward, Truck Supt. of F. R. Hewett Co., contractors of Spokane, Wash. "They have given us up to 50% more service than the tires we used previously. We have been able to retread them too."

IN NORTH DAKOTA—This scraper is one of 75 units operated by Northern Improvement Co. on road projects in the Dakotas, Minnesota and Montana. The scraper weighs 35 tons loaded, works 60 to 72 hours a week. The B.F.Goodrich FLEX-RITE NYLON Super Traction tires give 5,000 hours' service before retreading!

IN FLORIDA—The Ralph E. Mills Company builds roads all over the world. Here the job is grading and filling on the Florida State Turnpike. The company reports B.F.Goodrich FLEX-RITE NYLON Super Traction tires work as many as 3,000 hours, thanks in part to the on-the-job service the local BFG dealer gives.

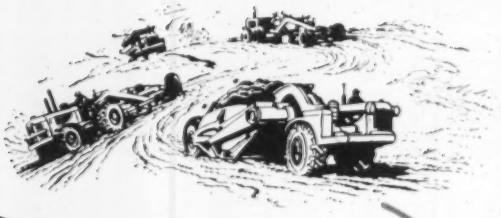
IN MICHIGAN—Julius Porath & Son Co. builds roads in southeastern Michigan, uses 105 pieces of equipment including trucks, cranes, dozers and graders. Because much work is in sand, Porath uses B.F.Goodrich FLEX-RITE NYLON 65" Special Earth Mover tires, reports they are "the best tires for this type of work."

IN PENNSYLVANIA—Gasparini Excavating Co., Inc., does highway and heavy construction work—here on the Pennsylvania Turnpike. The company finds "B.F.Goodrich FLEX-RITE NYLON tires give over 4 years' service. They minimize breakdowns and impact breaks, give maximum contract performance in the shortest contract period."

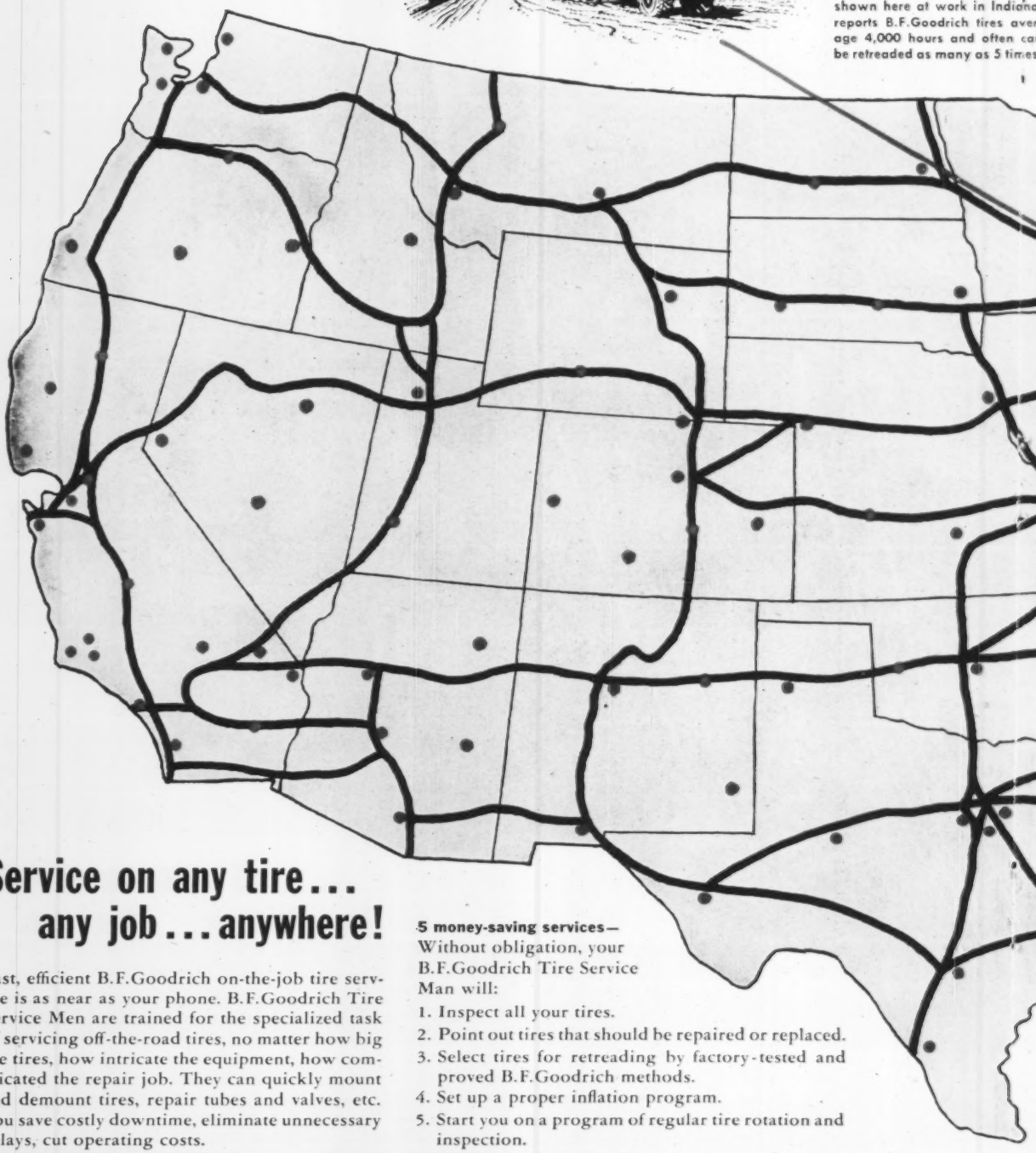
B.F.Goodrich

Smileage!

Wherever you go B.F.Goodrich tire



S. J. GROVES & SONS CO.
shown here at work in Indiana
reports B.F.Goodrich tires aver
age 4,000 hours and often ca
be retreaded as many as 5 times



Service on any tire... any job... anywhere!

Fast, efficient B.F.Goodrich on-the-job tire service is as near as your phone. B.F.Goodrich Tire Service Men are trained for the specialized task of servicing off-the-road tires, no matter how big the tires, how intricate the equipment, how complicated the repair job. They can quickly mount and demount tires, repair tubes and valves, etc. You save costly downtime, eliminate unnecessary delays, cut operating costs.

5 money-saving services—
Without obligation, your B.F.Goodrich Tire Service Man will:

1. Inspect all your tires.
2. Point out tires that should be repaired or replaced.
3. Select tires for retreading by factory-tested and proved B.F.Goodrich methods.
4. Set up a proper inflation program.
5. Start you on a program of regular tire rotation and inspection.

B.F.Goodrich ***off-the-road tires***

service keeps you on the go!

The red dots represent B.F.Goodrich dealers who offer on-the-job tire service. Whether you're at work on the $50-billion, 41,000-mile Interstate Highway System (black lines), or on any other construction, mine or quarry project, you can be sure of expert, efficient tire service on the job from your local B.F.Goodrich dealer.

O'CONNOR CONSTRUCTION CO. is turning an old road into a 4-lane highway in central Illinois, reports B.F.Goodrich tires give 6,000 hours of service, including retreads.

JERNIGAN TRUCKING CO. equipment hauls stone for bridge approaches near Augusta, Ga. The company reports B. F. Goodrich FLEX-RITE NYLON tires have gone over 50,000 miles—an all-time record on this operation.

FULLY EQUIPPED SERVICEMOBILES—B.F.Goodrich Servicemobiles are equipped with hydraulic crane, pneumatic wrenches, bead jacks and all of the latest power tools and devices for speedy, efficient tire service on the job.

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Boston, Massachusetts	HI. 4-6100
Buffalo, New York	RI. 1258
Charlotte, North Carolina	EX. 9-5621
Chicago, Illinois	ES. 8-8800
Cincinnati, Ohio	BR. 1-7800
Cleveland, Ohio	PR. 1-0827
Columbus, Ohio	AM. 8-8631
Dallas, Texas	RI. 1-5601
Denver, Colorado	TA. 5-1267
Des Moines, Iowa	CH. 4-7156
Detroit, Michigan	TY. 4-4892
Fargo, North Dakota	5-5597
Grand Rapids, Michigan	GL. 9-9534
Harrisburg, Pennsylvania	CE. 4-5974
Hartford, Connecticut	JA. 5-1186
Houston, Texas	CA. 7-5228
Indianapolis, Indiana	ME. 7-2508
Jacksonville, Florida	EL. 6-4167
Kansas City, Kansas	MA. 1-4400
Los Angeles, California	RA. 3-6692
Memphis, Tennessee	WH. 8-6761
Milwaukee, Wisconsin	DI. 4-5104
Minneapolis, Minnesota	FE. 2-5474
Newark, New Jersey	MA. 2-4422
New Orleans, Louisiana	JA. 2-6341
New York, New York	OR. 9-0330
Oklahoma City, Oklahoma	JA. 5-1587
Omaha, Nebraska	PL. 8133
Peoria, Illinois	3-8583
Philadelphia, Pennsylvania	JE. 5-5800
Phoenix, Arizona	AL. 8-6851
Pittsburgh, Pennsylvania	HI. 1-5200
Portland, Oregon	CA. 6-3621
Richmond, Virginia	EL. 5-6573
Sacramento, California	GI. 1-6127
St. Louis, Missouri	PR. 3-2600
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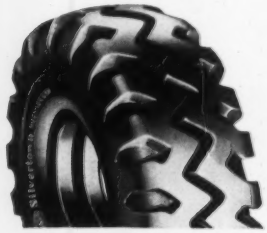

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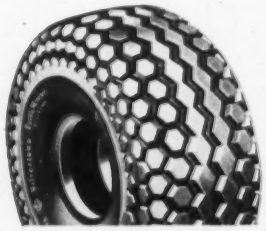

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B.F.Goodrich

Welded Mesh Anchors Asphalt

ROAD MESH IS PLACED on steel straps to deck at 45 deg angle to planking.

A new way to resurface timber-decked railroad overpasses has been developed by bridge engineers of the Reading Co. And from the record of installations to date it appears that use of the method will reduce not only the railroad's maintenance costs but also will benefit the motorists using the over-the-track structures.

Here's how it works:

The old wearing surface is removed and replaced by new 4 x 10 yellow pine planking. The planks are placed across the stringers at right angles to the road. Then, on half the width of the bridge, 1½ x ¼ in. steel straps are placed diagonally across the planking—2 ft c-c.

The diagonal placement of the straps ties the planking together but eliminates the rutting that might occur between the straps if they were parallel to the direction of vehicular travel. The straps are anchored to the deck with spikes long enough to penetrate both the deck and the stringers.

A 6 x 6 in. welded mesh of six gage wire is then laid lengthwise on the deck and welded to the straps at 12 to 18 in. intervals. Screeds are placed, and if necessary the planking is cleaned and dried with a torch. A tack coat of asphalt emulsion is followed by a 1½-in.-thick initial course containing 1 in. maximum aggregate.

The base course is spread and leveled by hand and then compacted by a roller. A 1 in. finish course with a maximum aggregate size of ⅜ in. is then placed and, after removal of the screeds, is rolled. Within 24 hours the paved area is ready for traffic, and the process can be repeated on the other half of the bridge.

(*F&O continued on page 73*)

WELDERS TACK WIRE FABRIC to straps, made from standard tie spacers.

TACK COAT OF ASPHALT EMULSION is applied to planking bound by strapping and welded wire mesh. Man at right adjusts removable wood screed.

PRIMARY COURSE OF BITUMINOUS CONCRETE is spread on one half the bridge. Other half is kept open for traffic.

Wire Reinforcement Institute Photos

ROLLER COMPACTS BASE COURSE. Wood screed (white strip in center) will be removed before the top course is placed.

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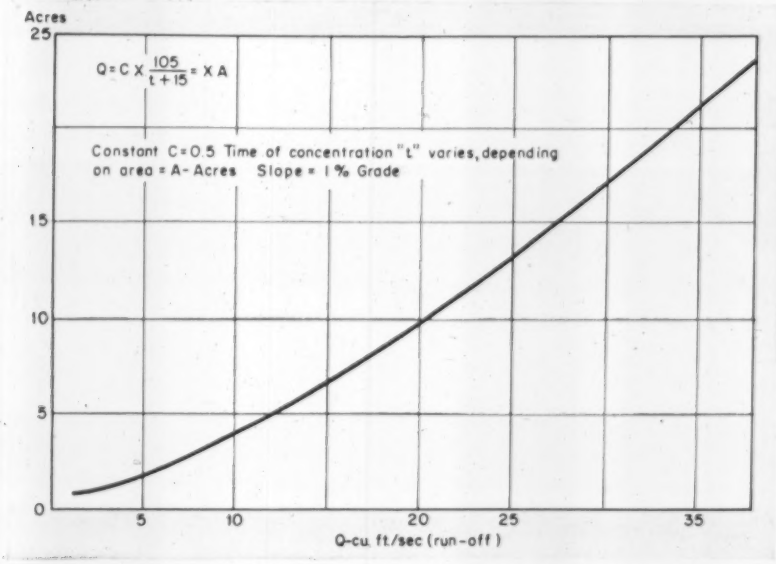
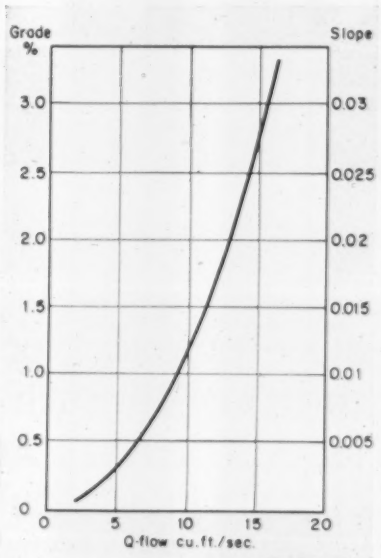


Runoff curve for small subdivision areas (above) can give accurate values if used for gently rolling land. Curve (right) gives slope of one 18 in. dia. pipe to carry runoff. Both help engineer make . . .



Quick Drainage Estimates

Figuring runoff and drainage pipe requirements for small subdivision areas can be done quickly and with good accuracy from a system of curves developed by Anderson & Martin Associates, consulting engineer of New York City.

The two curves, one for runoff estimates and the other for pipe, were developed on the assumption the land areas considered are rolling (neither too hilly or too flat) and half covered with grass or other verdure.

The runoff curve is plotted with values from the formula, $Q = cAR$ with R (from Talbot's) $= 105/(t + 15)$. The pipe curve is used to get the number of 18 in. dia. pipes required to carry the runoff. The 18 in. pipe is used entirely because smaller pipe is more easily blocked. The 18 in. pipe carries most debris through and does not cause stoppage problems. For number of pipe required if more than one is needed, divide pipe capacity at optimum slope into value obtained from runoff curve.

The curves are for the eastern United States. If the curves are used for other areas factors that will give good results are: San Francisco, 0.6; Louisville, 1.15; Denver, 1.66; Chicago, 1.12; New Orleans, 1.54; St. Louis, 1.46.

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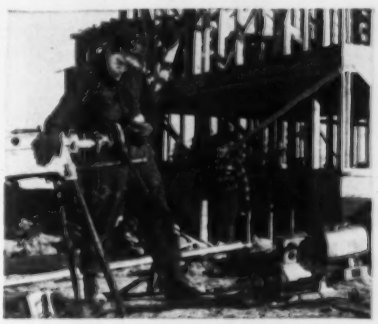

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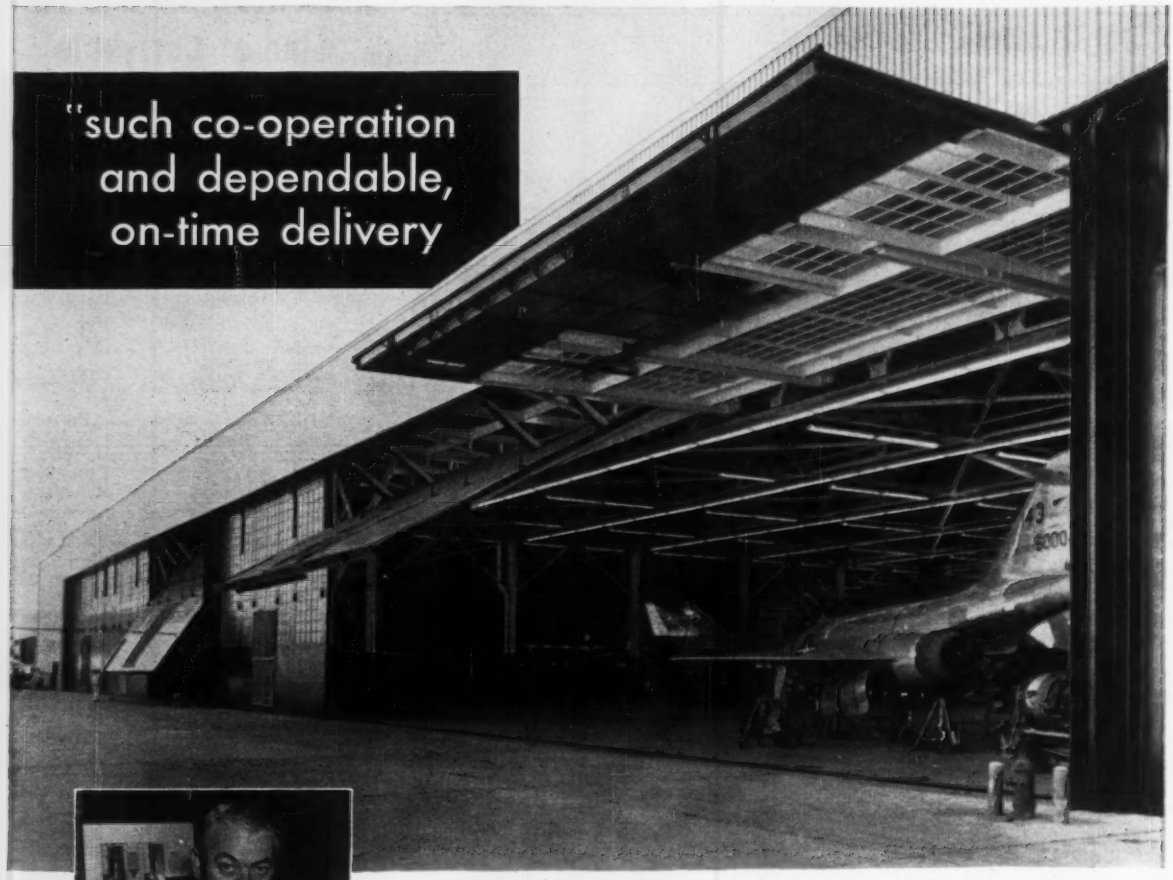
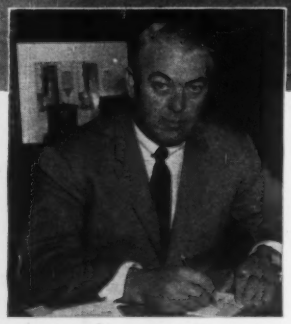


"such co-operation and dependable, on-time delivery



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Defects in Work
Contractor may be liable for satisfactory results

A contractor who builds according to plans and specifications ordinarily is not responsible for the results. But he may enlarge his liability by guarantying that what he builds will serve its purpose satisfactorily.

In a Rhode Island case, for example, a contract for installation of a heating system contained these guarantees by the contractor:

"Work is to be done in strict accordance with the plans and specifications. All material used is to be first class and the entire job is to be done in a neat and substantial manner. At the completion of the heating job, we are responsible for anything that goes wrong a year from the date of completion."

Shortly after completion of the work, one of the burners began to operate improperly and to backfire. The owner notified the contractor and the contractor did some work in an attempt to remedy the defects but the work done was not effective. A short time thereafter an explosion occurred in the boiler causing considerable damage to the building.

The owner sued the contractor to recover for the damages sustained to the building as a result of the explosion. The contractor claimed that the contract only required him to furnish material and workmanship of good quality and that his guarantee was limited to conformity with the plans and specifications and the furnishing of first class material and skilled workmanship.

The court held that the contract contained an express and comprehensive warranty that the heating system would give reasonably satisfactory performance for a year after its installation, and the owner was granted a judgment for the damages sustained. This judgment was affirmed on appeal.[1]

The appellate court said: "It is a well-settled rule of law that the intent of the parties to a contract is that which is found in the language employed therein. John F. Davis Co. v. Shepard Co., 71 R.I. 499, 47 A. 2d 635. Further, it is well settled that the intent of the parties to a contract in writing must be found from a consideration of the instrument as a whole and not from some detached portion thereof. Newport Water Works v. Taylor, 34 R.I. 478, 83 A. 833. The defendant (contractor) here made two express warranties in the instrument under consideration. He agreed in the first place to warrant that he must conform to the specifications and that 'All material used is to be first class and the entire job is to be done in a neat and substantial manner.' He then went on to make a further warranty that he would be responsible 'for anything that goes wrong a year from the date of completion.' Considering we must find the meaning of these contractual provisions from the instrument as a whole, it is our opinion that the defendant (contractor) not only warranted conformity to the specifications and the materials and the workmanship, but he also guaranteed that the system would give reasonably satisfactory performance for a year after the completion of its installation. Reading the second provision in its relationship to the first, we cannot perceive how any other conclusion can be reached, or that the trial justice erred in so construing the contract."

(1) Shuster v. Sion, 136 A. 2d 611, Supreme County of Rhode Island, Nov. 26, 1957.

Employment Restriction Is Sustained by Court

An employment contract provision prohibiting an engineering employee from engaging in a competitive business in the same area after leaving his employment is generally enforceable if reasonable in scope.

The question arose recently in Ohio, where a company, engaged in the manufacture of spray painting machines and equipment, employed a mechanical engineer as plant superintendent and chief engineer.

The employment contract provided that, upon termination of employment, the engineer would not work competitively in the same area for a period of five years. When the contract ended, the engineer found a job with a competitor in the area.

The former employer sought an injunction prohibiting the employment and the injunction was granted.[1]

The court, quoting from 17 C.J.S., Contracts, section 254, page 636, observed: "It is the rule in the absence of contrary statute that agreements by which an employee, as part of his contract of employment undertakes not to enter into a competing business on leaving his employer's service are sustained if they are no wider than reasonably necessary for the protection of the employer's business, and do not impose undue hardship on the employee, due regard being had for the interests of the public."

The same principal of law was sustained in a recent Pennsylvania case,[2] where the court stated: "The rule has come down to us as part of the present-day law of Pennsylvania. We have held that employment contracts containing general covenants by an employee not to compete after the termination of his employment are prima facie enforceable if they are reasonably limited as to duration of time and geographical extent."

(1) Conforming Matrix Corp. v. Faber, 146 N.E. 2nd 447, Court of Appeals of Ohio, March 18, 1957.

(2) Morgan Home Equipment Corp. v. Martucci, 136, A. 2 d 839, Supreme Court of Penn., Nov. 22, 1957.

Defective Performance And Allowable Damages

The courts, as a general rule, do not allow an owner to enrich himself unjustly in obtaining damages from a contractor for defective work.

In a recent Massachusetts case,[1] where the party for whom a house was being constructed brought an action against the contractor to recover damages sustained as a result of defective performance, the court held that the measure of damages, in the absence of other elements of damage, as, for example, for delay in construction, can be only in the amount of the reasonable cost of completing the contract and repairing the defects in the work, less such part of the contract price as has not been paid.

This rule, it said, applies even though the contractor has not made substantial performance in good faith.

(1) Di Mare v. Capaldi, 146 N.E. 2d 517, Supreme Judicial Court of Mass., Dec. 11, 1957.

These summaries of court decisions are prepared by J. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

R. Thomas McDermott, president of J. Ray McDermott & Co., Inc.—started his firm with a $90,000 loan and 35 years later it is listed on the "Big Board" because its people were around at the . . .

Right Place at Right Time—and Lucky

One spring day in 1923 two leather-booted men met on a muddy street in Luling, Texas. Solidly built, gruff-voiced R. Thomas McDermott, then 24, told wildcatter John Mowinckle: "I'll build you 50 drilling rigs on credit, John. And I'll give you six months to pay." They shook hands, then drank to their luck from a pint jug.

"Neither of us had a dollar," recalled Mr. McDermott as he relaxed on red leather upholstery in his office on the 14th floor of the Houston Club Building. "I borrowed $90,000 from the old Lipscomb Bank in Luling. The bank was capitalized for only $75,000. The rest is history. John hit oil and we both did well."

Today, John Mowinckle, a sharecropper's son, is a multi-millionaire.

Thomas McDermott, a stocky five feet six, with pale blue eyes and a ruddy complexion, is now the boss and principal stockholder of J. Ray McDermott & Co., Inc., engineering and construction company. The firm, named for his late father, operates in 11 states and in Venezuela and Nicaragua. And recently it achieved special standing in the financial world. Its stock was accepted for trading on the New York Stock Exchange. Twenty-five percent of the two million shares outstanding is owned by the boss, Tom McDermott.

Competitors agree that Tom McDermott's leadership has brought the firm where it is. But McDermott snorts, "my people put it there. I hired Roger Wilson. He organized this outfit. We hire top engineering brains, and we take care of our people in this firm."

Roger Wilson, Texas born, is at 50 the executive vice-president and heir-apparent to McDermott's chair.

"He'll succeed me," say Mr. McDermott bluntly, "because he's my top man. He does the front work and he does it well. Roger and the others helped me make a lot of money. I've got all I want today and I'm grateful to them. And I've seen to it that they've made a lot of money."

Mr. Wilson, who joined the firm 23 years ago as a contact man, explained the fast growth of the McDermott operation:

"We were at the right place at the right time and 90% lucky."

It was McDermott's late chief engineer, M. B. Willey, he said, who designed the first template-type off-shore platform. "We pioneered off-shore platform construction, and our template-type platform design today is used exclusively in the Gulf of Mexico."

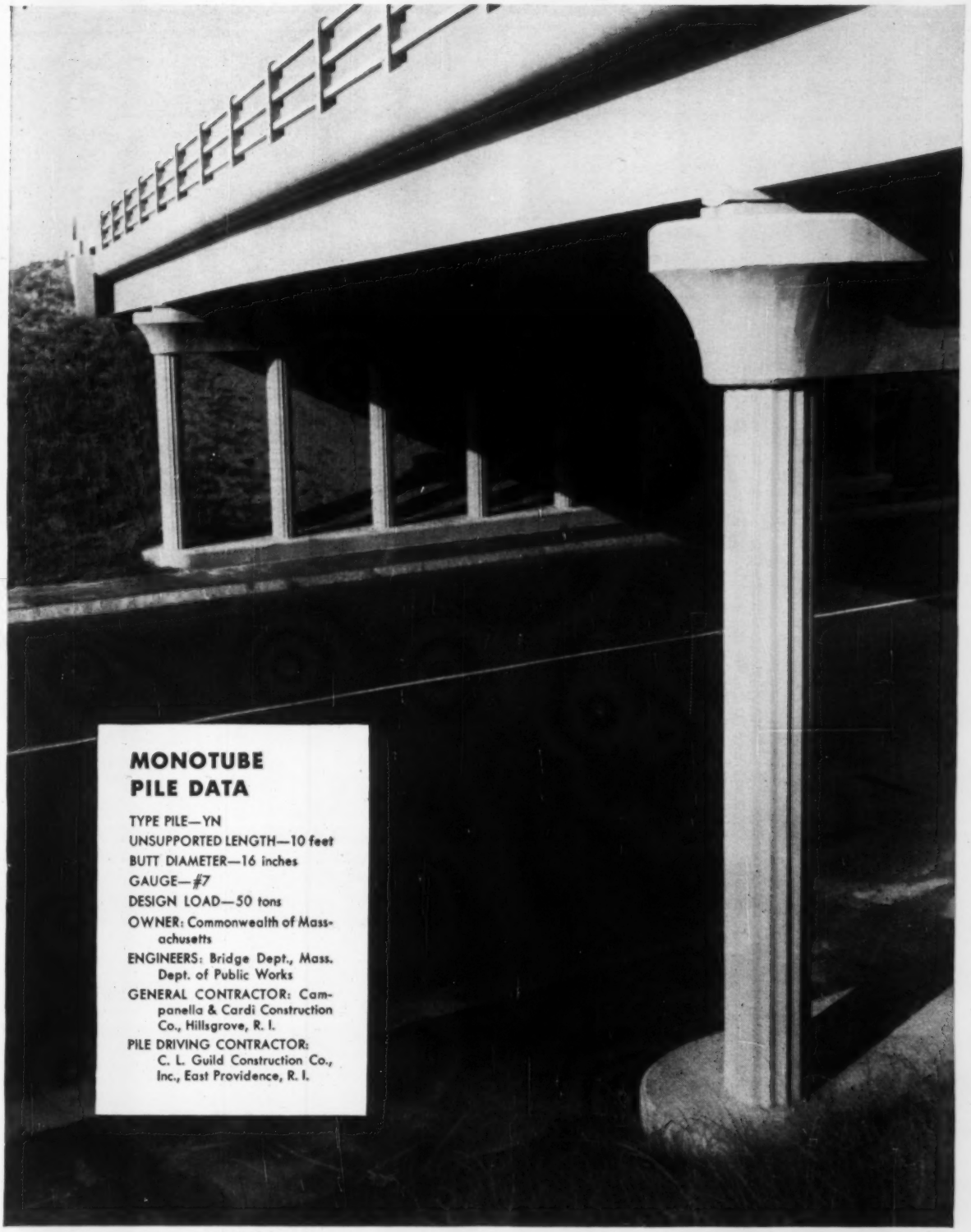
Template-type construction, Mr. Wilson said, has saved the oil industry countless dollars because it permits huge superstructures to be built on land. This cuts the high cost of off-shore labor.

• **Rapid progress**—By all standards the firm's rise has been meteoric. From a shoestring and a gamble, Tom McDermott built his business into a giant with 2,000 employees and a monthly payroll of $1 million. The first payroll, Mr. McDermott recalls, was "about $10,000."

The firm has been tied to the oil industry since its founding and although it owns oil and gas properties, the bulk of its revenue is derived from oil field contracting and engineering work.

One of the executives said: "We'll dredge a canal, build an off-shore platform or lay a pipeline—you name it. Anything structural in the oil business we'll do, and usually better than any of our competitors."

The company has more than doubled its gross income from general contracting and engineering operations over the past five years. For the fiscal year ended Mar. 31, 1953, income from


MONOTUBE
PILE DATA
TYPE PILE—YN
UNSUPPORTED LENGTH—10 feet
BUTT DIAMETER—16 inches
GAUGE—#7
DESIGN LOAD—50 tons
OWNER: Commonwealth of Massachusetts
ENGINEERS: Bridge Dept., Mass. Dept. of Public Works
GENERAL CONTRACTOR: Campanella & Cardi Construction Co., Hillsgrove, R. I.
PILE DRIVING CONTRACTOR: C. L. Guild Construction Co., Inc., East Providence, R. I.

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contracting was nearly $20 million. Five years later it exceeded $52 million. Income from oil and gas properties was more than $2.5 million in 1953 and nearly $5 million in 1957.

One of McDermott's major jobs was laying 120 miles of gas pipeline through the Louisiana swamps for United Gas. This was a $6 million contract. The firm also supplied a group of oil companies with steel and fabricating materials for about 15 off-shore platforms, each costing about $1 million.

• **Behind-the-scene worker**—But the boss of this vast operation is a mystery man in Texas. Oilmen knew comparatively little about him. "And that's the way I want it," Mr. McDermott says. "The less said about me the better."

One oilman called him "the behind-the-scenes brain of his company." Another described him as "a shy, warm person, but very difficult to know."

Mr. McDermott himself says: "I'm not much for social life. I haven't been downtown after dark in 10 years."

He arrives at the office about 8:30 a.m. after a hearty, "roughneck's" breakfast—usually a sirloin strip—at his home in exclusive River Oaks. Lunch, when he feels like taking it, is generally at the Houston Club on the 10th floor. He leaves work at about 6:00 p.m.

While in the office, his door stays open to his executives. "We don't have to make an appointment to see him," one of the senior executives said. "You just walk in and tell him what's on your mind. He'll listen and then tell you what he thinks."

Mr. McDermott has given his employees plenty of benefits around the fringes, such as a profit-sharing plan, a pension plan and free hospitalization. But he also can be tough with them.

"He fired me once on a job in Homer, La., because I didn't build a rig the way he told me to," asserted Johnny McDonald. McDonald packed his tools and drove to the Pierce Junction field on the outskirts of Houston where he was hired for another McDermott job by a superintendent who didn't know he had been fired in Louisiana.

A week later, Mr. McDermott appeared at the Pierce Junction job and glared at McDonald: "I thought I fired you," he barked.

"You did in Louisiana," McDonald told him, "but I'm in Texas now."

Today Mr. McDonald is the Houston office manager for McDermott. "I've been with him for more than 25 years," he said, "and I've learned one thing: produce for Mister Mac (as many employees call the top man) and he'll do right by you."

• **Reorganization**—Tom McDermott has shown his gratitude toward the old-time employees who helped him make a fortune. In 1946 he sold the assets of the J. Ray McDermott & Co. of Texas of which he was the president and sole stockholder. Estimated value of the firm was $1 million. Then he organized a new firm, the J. Ray McDermott & Co. of Delaware, with a capital investment of $200,000. He loaned his top men $90,000 to buy 45% of the first stock issue and himself bought 55% with a $110,000 investment.

Once the Delaware corporation was formed it branched out into the oil and gas producing business. It now holds leases in the Southwest, Canada and Nicaragua containing 350 producing oil and gas wells.

From the parent McDermott firm have sprung two affiliates: J. Ray McDermott (Venezuela) C.A., which specializes in marine oil field construction in Venezuela; and the Off-Shore Co., which drills oil and gas wells for others on a contract basis. McDermott's firm owns all the Venezuelan affiliate and 32% of Off-Shore.

The parent company is divided into three parts: the contracting division (building off-shore rigs, pile driving, laying pipelines and building docks and bulkheads); the fabricating division, which owns plants in Louisiana that make structural materials for construction jobs; and the lumber and supply division, which provides oil and gas companies with wood piling, lumber, drilling mud and cement.

• **Like father like son**—Tom McDermott was born in Clarksburg, W. Va., the son of an oil rig builder. He quit elementary school after four years: "I didn't like it," he said. When he was 20 his family moved to Ranger, Texas, one of the early Texas oil boom towns.

"Dad was building those old wooden cable tool derricks, and we didn't have an easy time," he recalled. He added, "I can take it easy now. Roger and the others are carrying the load."

The recession has taken a bite out of the firm's business this year, as Mr. McDermott is quick to admit. But, he says, "Although business is off 30% from last year, we're expanding right along."

Perhaps the best explanation of this kind of driving success came from a junior executive:

"This company is what it is today because of the imagination of the old man, Mister Mac himself. He's always thinking.

"The only way to get ahead of him is to walk in front of him."

Meade Named Consultant For the New York Port

R. Adm. Robert H. Meade, U.S.N. Ret., has been appointed Consulting Engineer of the Department of Marine and Aviation and of the New York City Council on Port Development and Promotion, succeeding the late John M. Buckley.

Admiral Meade retired as Chief of the Navy's Bureau of Yards and Docks and Chief of Civil Engineers last year after 35 years of service in the Navy. He had been Chief of the Bureau of Yards and Docks from 1955 until his retirement. From 1953 to 1955 he was in Spain as director of construction in the $360 million joint United States-Spanish construction program for naval bases in Spain.

Born in Newark, N. J., Admiral Meade studied at Stevens Institute of Technology before entering the U. S. Naval Academy, where he graduated in 1926. After a three-year postgraduate course in civil engineering, he received the degrees of Civil Engineering and Master of Civil Engineering in 1929 and 1930 from Rensselaer Polytechnic Institute.

Careers

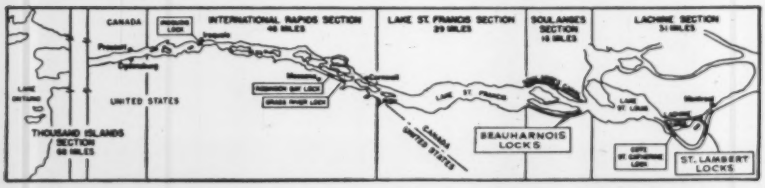
Public Works

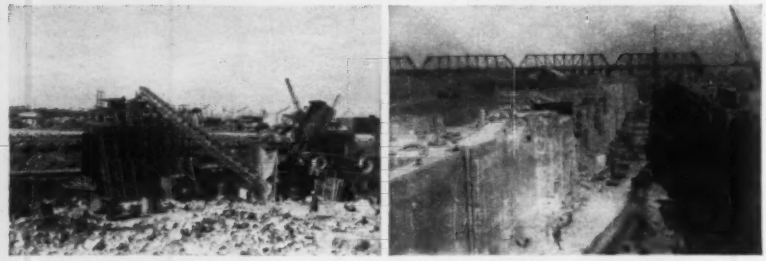
Col. Edmund M. Fry will become District Engineer for the Army Corps of Engineers at Rock Island, Ill., in September. He will succeed **Col. John L. Wilson, Jr.**, who retires at the end of August.

Col. Ivan H. Impson, U. S. Air Force installations representative in Dallas, assumes duties as chief of the engineering division of the office of the deputy director of construction for the Air Force.

John M. Townes, Jr., has been pro-

Dumpcretes work on two lock jobs at St. Lawrence Seaway





McNamara-Piggott-Peacock Ltd. used five Dumpcretes to handle 405,000 cu. yds. of concrete on the St. Lambert Lock and Approaches at Montreal, Quebec. Lock will be approximately 765 ft. long, 80 ft. wide and 30 ft. deep. At Beauharnois, Quebec, another lock is under construction, with concrete handled by Dumpcretes, by United Waterways Constructors (Angus Robertson-Pentagon-Foundation).

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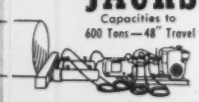

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. . . Men and Jobs

moted to highway contract engineer for the Virginia State Highway Department, replacing **S. F. Stephens,** who takes over the new position of highway construction control engineer. Two construction engineers, **Edward D. Slate** and **James W. Smith,** are being transferred from other areas to assist Mr. Townes.

Kenneth W. Marsh, who has had the position of public works commissioner of Albany, N. Y., retired effective April 1.

Carl M. Smith, formerly deputy director of the Port of San Francisco, has been appointed director of the port, a position he has temporarily held since last October. He is president of the California Association of Port Authorities.

Business

Ted A. Anderson has been appointed as a vice-president of the McNeil Construction Co., Los Angeles, Calif. He was formerly assistant to the general manager.

Albert L. Reeves has been named vice-president of the Utah Construction Company, San Francisco, Calif. His duties will include general administration and contract negotiation for the firm.

Robert R. Baker has been named chief civil engineer in the Tampa, Fla., office of Gibbs & Hill, Inc., consulting engineers. He was a principal in Palmer & Baker, Inc., of Mobile, Ala., from 1941 to 1956.

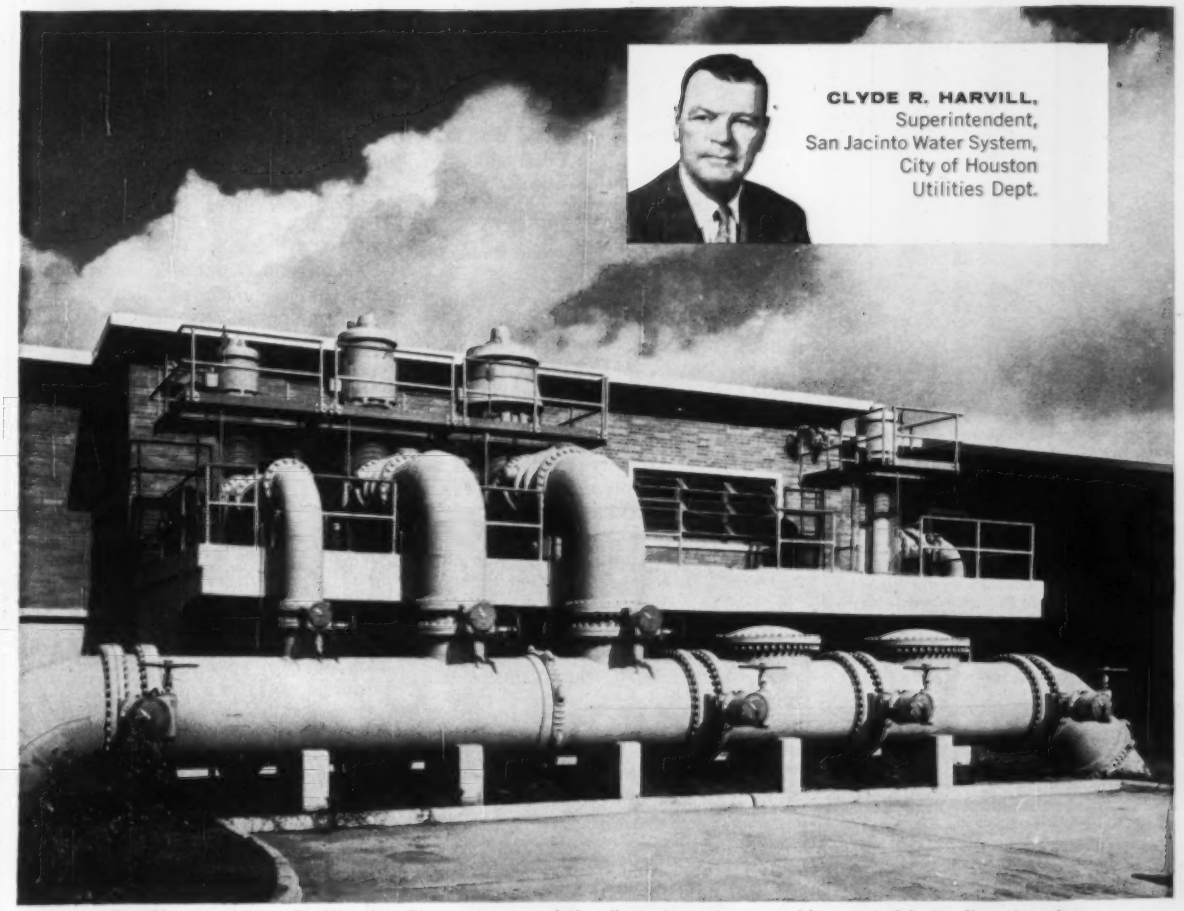
Walter G. Daniel, who recently resigned as city engineer of Jacksonville, Fla., to be succeeded by **Bill Bryant,** has accepted a position as consultant-engineer for the Jacksonville Expressway and the $30 million public improvement program just beginning in Jacksonville.

Education

William T. Alexander, dean of engineering at Northeastern University, Boston, has been elected president of the American Society for Engineering Education for the year beginning in July. Clarence L. Eckel, dean of engineering at the University of Colorado, is re-elected vice president in charge of regional activities in the western states.

Associations

S. James Campbell, treasurer of Harry T. Campbell Sons Corp., Baltimore, has been named chairman of the board of directors of the Associated Builders and Contractors of Maryland, which is composed of 540 construction industry firms.



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Superintendent,
San Jacinto Water System,
City of Houston
Utilities Dept.

The Houston Water Purification Plant was one of the first plants to use rubber-seated butterfly valves in filter service. Freese, Nichols and Turner, Consulting Engineers, chose R-S Rubber-Seated Butterfly Valves over conventional gate valves for all low-pressure service because their compact design permitted close coupling of pipe. Result: a substantial saving in space, and a direct, in-place cash saving of $124,000.

Houston, Texas, Reports: COMPLETELY SATISFIED WITH R-S BUTTERFLY VALVE OPERATION

When the Houston Purification Plant went into operation in 1954, 65 R-S Rubber-Seated Butterfly Valves were used to equip the entire low pressure system. Today, Mr. Harvill reports that these valves are giving good service, and that he is fully satisfied with their performance and minimum maintenance requirements during their first years of operation.

R-S Rubber-Seated Butterfly Valves are easy to operate, and will provide 100% effective shut-off with a 125-pound pressure drop. Wedging action of the vane against the tough, flexible rubber seat assures positive closure, even around shaft bosses. The special composition of rubber and other materials gives long wear and resistance to the abrasive action of material flow.

To obtain complete information on the full SMS line – Butterfly Valves, Rotovalves and Ball Valves – see our local representative, or write S. Morgan Smith Company, York, Penna.

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Obituaries

Jeremiah J. Collins, 74, vice president and a director of Raymond International, Inc., a New York City foundation and heavy construction firm, died April 13 in East Orange, N. J. Until last September, Mr. Collins had been chairman of a management committee of Brown-Raymond-Walsh, a group of three U.S. construction companies building five Air Force bases, a Navy base and a 485 mile pipeline in Spain for the Navy's Bureau of Yards and Docks. Mr. Collins, a civil engineering graduate of the University of Michigan, joined Raymond Concrete Pile Co. (now Raymond International, Inc.) as a construction superintendent in 1912. Later on, he became general superintendent and project manager in charge of many of the company's domestic operations. In the 1920's, when the firm expanded into overseas work, Mr. Collins directed investigations, estimates and negotiations and since has supervised numerous overseas construction projects.

Newlin Dolbey Morgan, 69, professor of civil engineering and architectural engineering for 30 years at the University of Illinois, until retiring in 1954, died March 7 in Laramie, Wyo. He was graduated from the University of Colorado in 1910 with a degree of BS in CE, and received his professional CE degree in 1925. In 1928 he received his master's degree in civil engineering from the University of Illinois. Among his professional writings are two books in which he was co-author with Professor Hardy Cross. They are, "Continuous Frames in Reinforced Concrete," and "Statically Indeterminate Structures." A member of nearly a dozen engineering and honorary fraternities and societies, he received a citation in 1955 from the College of Fellows of the American Institute of Architects, honoring him for meritorious teaching. In addition to teaching, he spent considerable time designing bridges and structures for consulting engineers, railroads, state highway departments, and federal agencies.

William L. Sylvester, 64, civil engineer, died February 5 at West Palm Beach, Fla. He was assistant chief engineer of the Sewage Department for the City of New York from 1930 to 1938, later served as assistant to the commissioner of public works of New York City and director of public relations. He moved to Florida in 1954, where he became associated with the Central and Southern Florida Flood Control District, and from 1956 until his death was with Gee & Jenson, Inc., consulting engineers. He received his civil engineering degree from the University of Cincinnati in 1916.

Louis A. Garavaglia, Jr., 40, and **Jule C. Garavaglia,** 28, brothers who were president and vice president, respectively, of Louis Garavaglia Contractors, Inc., Detroit construction firm, were killed in a helicopter flight March 25. Both were civil engineering graduates of the University of Detroit and headed the firm their father had founded in 1917.

Richard A. Thomas, 74, retired director of the municipal public works department at Winston-Salem, N. C., died March 8. He received his civil engineering degree from Virginia Polytechnic Institute in 1905. In 1920 he went to Winston-Salem to become city engineer and was appointed commissioner of public works in 1935.

John A. Goodfellow, 77, founder of Goodfellow Brothers Construction Co. and commissioner of public works for 10 years, died March 9 at Seattle, Wash.

Marcel Garsaud, 76, former member of the Federal Power Commission and engineering consultant to the New Orleans Dock Board, died February 11 in New Orleans. Mr. Garsaud, named to the FPC in 1930 by President Hoover, had a career that included service with the Orleans Parish Levee Board as chief engineer and nine years in his latest capacity with the Dock Board.

Joseph M. Camarco, 55, president of Camarco Contractors, Inc., Carmel, N. Y., died February 21. Mr. Camarco first worked with, and later succeeded, his father as president of the firm in 1939. In following years his firm completed numerous highway and bridge projects, for the New York State Highway Department, New York State, county and town projects, along with projects for private enterprises.

William A. Penick, 64, president of the Natural Asphalt Corp. of Virginia, died February 27 at Richmond. He had served as president of the Virginia Road Builders Association and the Virginia Asphalt Association.

Floyd E. Rogers, 67, former civil engineer of Tacoma, Wash., died February 23. He retired four years ago after 30 years with the Tacoma engineering department.

NOW! AIRESEARCH TURBOCHARGERS ON INTERNATIONAL HARVESTER TD-24

Boost giant crawlers over rugged terrain at high altitudes

Uniform sea level performance in the thin air of Colorado's high country is standard operating procedure for International Harvester's big TD-24 crawlers, now that the AiResearch Turbocharger T-14 has been added.

Actual on-the-job results at high altitudes under widely varying operating conditions have shown:

- increased horsepower to sea-level rating
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All AiResearch turbochargers are air-cooled, thereby requiring no extra plumbing, and placing no added burden on the cooling system. Ease of installation and long life add to the outstanding record of AiResearch turbochargers in the field.

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Washington, D.C. Crosstown Route

Cost of paving and widening 2.2 mile crosstown route link averages $278,080 per mile

This $611,694 contract to Corson & Gruman Co., Washington, D. C., for paving and widening a 2.20 mile crosstown route link in Washington, D. C., averages $278,080 a mile. This is 3.7% above the engineer's estimate, but 6.2% below the high of the five bids. Porter, Urquhart, McCreary & O'Brien, Newark, N. J., are the consultants.

Pavement is 8 in. reinforced concrete, 30 ft wide. The project covers portions of Kenyon, Irving, Columbia and Harvard Streets, and Columbia and Park Roads, all in N.W. Washington.

1C	Corson & Gruman Co., Washington, DC	$611,794
2	Helsing Bros., Inc., Washington, DC	623,079
5	Myers & Quigg, Inc., Washington, D.C.	651,799
EE	Porter Urquhart, McCreary & O'Brien, Newark, N.J.	590,080

Bids: 1-29-58 Items	Unit	Quantity	Unit Prices 1C	 2
Exc, earth or ordinary	cy	13,800	$1.85	$2.00
exist hard surf	cy	9,500	2.95	4.20
pavement	cy	70	15.00	10.00
hand	cy	150	12.00	12.00
Borrow	cy	650	3.60	3.80
Reinf conc base, 8"	sy	3,000	5.85	6.00
rdway pavement, 8"	sy	40,000	6.60	6.30
Conc pavement, 7"	sy	750	6.00	6.00
sidewalks, var widths	sy	5,100	4.60	4.75
repl or rep	sy	5,800	5.20	5.25
base course	cy	60	25.00	24.00
pavement	cy	60	30.00	26.00
mix for walls, etc	cy	100	70.00	75.00
header curb	cy	50	45.00	65.00
curb, 8 x 8½ x 15	lf	20,900	2.00	2.20
& gutter, comb	lf	1,300	2.60	3.50
gutter or shoulder	sy	100	7.00	9.00
Surf mixt, sht asph pavemt	t	200	21.00	20.00
Bit surf course CM-B	t	200	15.00	14.00
Asph conc binder, modified	t	150	15.00	15.00
base course	t	100	10.00	14.00
Stone curb, circ, 8x12" set	lf	300	3.75	3.50
8x8" or 8x12" reset	lf	1,300	3.00	3.50
old remov & haul	lf	300	1.00	1.00
MH frames & basins, S&W adjust	ea	200	9.00	8.00
PUC, over 3" sf adjust	ea	40	1.000	1.00

Class A reinforced concrete requires seven bags of cement per sq yd.

The contractor furnishes all materials except stone curb for driveways. Truck and rail transportation will be utilized, with the railroad two miles from the project.

Minimum wages prevailing in the District include: paver operator, $2.45; curb setter, roller operator, form setter, carpenter, $2.30; concrete spreading machine operator, $2.05; flat truck driver, $1.75; unskilled laborers, $1.80.

Bids: 1-29-58 Items	Unit	Quantity	Unit Prices 1C	 2
Calc chloride in conc mix	lb	4,400	0.05	0.05
Expan jt, add ½"				
bet alley or rdwy slabs	lf	1,675	0.60	0.70
conc sidewalk	lf	10,100	0.45	0.60
Wire mesh reinf, add 50 ¢	sy	600	0.60	0.65
Conc curb, circ, for alley corners, 8x8½x15	lf	470	3.00	3.00
Surf mixt, bit pave, resurf	t	250	23.00	25.00
Topsoil, 4"	sy	6,250	0.55	0.60
Conc comb circ curb & gut	lf	120	3.60	4.00
Reinf conc circ curb, 8x8½x15"	lf	600	2.50	3.30
Guard rail	lf	280	4.20	5.00
Masonry walls, rubble stone	cy	130	75.00	90.00
Reinf stl for steps, walls, etc	lb	120	0.30	0.30
Trench exc, incl sewer pipe & basin conn	cy	2,400	8.15	8.00
Stab soil base course	cy	5,900	3.70	3.80
MH frames, sewer & watr	ea	30	55.00	65.00
RCP, C-75, 15"ϕ	lf	1,400	9.50	7.00
18"ϕ	lf	1,300	6.50	8.00
Catch basin, elongate to existing 8'	ea	6	240.00	250.00
9'	ea	7	360.00	300.00
std 6x4x2½'	ea	7	290.00	275.00
Basins, elongated, 1	ea	40	465.00	425.00
2	ea	9	540.00	500.00
Sewer brick masonry	vlf	204	38.00	40.00
MH, reinf conc, over 12'	cy	25	110.00	100.00
Basins, abandoned	ea	18	70.00	50.00
Anchor bars, compl ip	ea	100	4.00	2.00

Completion schedule: 180 calendar days
Liquidated damages: $150/calendar day
vlf vertical linear ft

Breakwater and Harbor of Refuge, Michigan

Forty-eight percent of this $703,285 contract at Port Austin on Lake Huron, Mich., is for placing steel sheet piling at 8.5¢ a lb. The award to Lyons Construction Co., Whitehall, Mich., by the District Engineer, U. S. Army District, Detroit, is 3.7% below the engineer's estimate, and almost 26% below the high of six bids.

The contract covers construction of approximately 2,000 lin ft of steel sheet piling cellular breakwater, and dredging of a harbor of refuge for shallow draft vessels, with a basin approximately 13.6 acres in area, 10 ft deep below water datum, and an entrance channel 12 ft deep below water datum and extending to the 12 ft contour in Lake Huron.

The contractor furnishes all materials except steel sheet piling.

Minimum wages include: chief engineer, hydraulic and dipper dredges, $3.292; hydraulic and dipper dredge operator, $3.252; structural iron workers, $3.60; pile drivers, $3.275; common laborers, $2.12.

1C	Lyons Construction Co., Whitehall, Mich	$703,285
2	C. A. Hull, Inc., Birmingham, Mich	768,590
6	Dunbar & Sullivan Dredging Co., Detroit	948,670
EE	Detroit District Corp. of Engineers	730,065

Bids: 3-25-58 Items	Unit	Quantity	Unit Prices 1C	 2
Dredging	cy	91,000	$1.84	$3.00
Steel sht piling place	lb	3,997,000	0.085	0.07
ladder	ea	6	100.00	100.00
Cell fill	cy	23,000	5.00	5.00
Bituminous cap	sf	40,000	1.00	1.00
Riprap	cy	4,000	10.00	15.00
Light base	ls	job	500.00	200.00

Commence: June 1. Completion schedule: 285 cal days
Liquidated damages: $80/calendar day

NEW BAY CITY 1½ YARD

AS A SHOVEL: digs more yards per day!

AS A CRANE: lifts bigger loads at greater radius!

Alloy Cast Steel Bases for lower base assembly and rotating base are designed to resist deflection and withstand shock loading. Your equipment dollar goes further because castings are used where castings are best. The cast lower base has a large 76" diameter removable roller path and a sturdy 10" diameter removable center post . . . the revolving base is full length to support engine, machinery and boom to give you bigger value.

Crawlers — you have a choice of standard crawlers with 9384 square inches GBA or special crawlers with 10744 square inches GBA to get the stability needed for best operation. There is extra long life built into these sturdy crawlers which make sharp or gradual turns while propelling . . . no need to stop to shift jaw clutches.

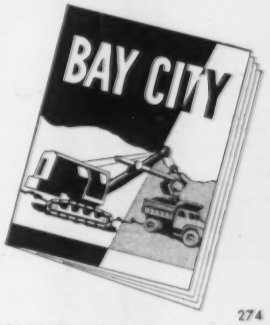
Engine Drive consists of a Twin-Disc two-plate clutch and a Twin-Disc hydraulic coupling joined by a specially arranged flexible coupling to provide a smooth, dependable power flow for all operations. Final drive is through a speed reducing unit of helical gears, splined to shafts and running in oil.

Swing Mechanism of heavy-duty construction and mounted in 8 anti-friction bearings offers quicker response, faster swing and easier operation. Internal two-shoe type clutches are manually operated thru needle bearings on hardened tapered keys, thus assuring simplest control with minimum maintenance.

Drum Assemblies packed with power features are in tandem to give best cable lead with any attachment. The hoist and front drum spools up to 470 feet of ¾" cable or 385 feet of ⅞" cable, thus providing ample cable capacity for those unusual jobs. Both drums have newly designed, self-energizing two-shoe type internal clutches and removable cast iron flanges to give long service with minimum maintenance. The heavy-duty mechanical power controlled boosters actuate the main clutches with a minimum of effort.

The Boom Hoist is of the worm and worm wheel type that raises and lowers boom and/or load only under power with the Erector Crane having as standard a fully independent boom hoist.

You will like the popular price of this new 1½ yard Shovel-30-ton Crane. Built to heavy duty standards, it has been proven in tough rock digging from New England to the Northwest. Here is a Shovel-Crane packed with the many outstanding features that gives you the biggest value for your equipment dollar. Look over the condensed specifications at the left—they point out a few of the high-spots that bring you peak operating efficiency, bigger performance and lower maintenance to handle the close-bid jobs.



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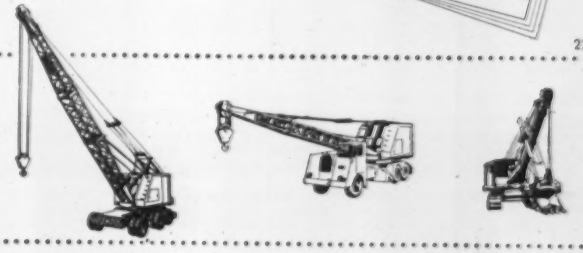

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, April 17; Next, May 15
- Wood Products, Glass, Explosives, Chemicals: Last, April 24; Next, May 22
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 1; Next, May 29
- Wage Rates, Building Board, Lath, Insulation: Last, May 1; Next, May 29

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.35am	$3.94am	$3.60m	$2.28	$2.28	$2.50‡	$2.18	$2.33	$1.65	$1.75	$0.175	$ .21	$14.50y
Baltimore	4.45a	4.05a	3.52a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.30/13.80
Birmingham	4.23	3.30f	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	5.65ei	4.59a	4.65r	3.00am	3.00am	3.00am	1.75am	1.85am	....	....	.23	.275a	15.00h
Chicago	4.13ag	3.87a	3.90/3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	13.50
Cincinnati	4.70c	4.18c	4.20c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	....	3.88c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a	....	.22	16.15
Dallas	3.75a	3.25a	3.63	2.65	2.70	1.90	2.43	2.63	....	....	....	.27	12.00
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20	....	....	....	....	.22	.245a	10.70
Detroit	4.10a	3.60ag	3.73ag	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.24	.27a	14.20
Kansas City	4.23a	3.83a	4.10a	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	13.50
Los Angeles	5.12ek	4.68ek	5.60	2.56‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	....	....	.17fm	.285m	13.95kh
Minneapolis	4.44a	4.04a	4.10a	2.70‡ag	2.70‡ag	1.60‡ag	3.75‡ag	3.75‡ag	....	....	.19	....	14.30f
Montreal	3.36d	3.11d	3.72	1.90‡a	2.15‡a	2.25‡a	1.90‡‡	2.15‡‡	2.00	2.00	.20	.26a	10.80ak
New Orleans	3.75a	3.45a	3.70	2.44	2.44	2.00	....	....	1.48	1.85	.275	....	13.65
New York	4.83a	4.42a	3.72	3.20bk	3.20bk	2.30bk	3.10bl	3.10bl	....	....	.235n	.270b	17.40qn
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	3.35	.25/.32	....	14.15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.90aq	2.60aq	3.00aq	2.00s	2.00s	2.20	2.20	.26	.28	15.80
St. Louis	4.16/4.48c	3.78/4.08c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.65j	1.75j	....	....	.24	.30c	12.65/13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.23kl	12.75c
Seattle	4.27a	3.75a	4.45a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.25	.37c	13.90y
Toronto	4.00a	3.84a	4.00a	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.26	.275c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add 14.58 to $21.31 per car switching charges *g fob mill + freight *h LCL. *i Less 2% disc, 10 days *j Truck lots, fob yard *k 100 bag lots *l over 150 sacks *m Incl. 4¢ Ga. frt. increase

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q fob yard

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 8½ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 16.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 25 cu. yds or more. *c 10–100 cy. brackets. *d 1–3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard. *n Plus escalator clause. *o Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Bullington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.58†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Lesley, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alson, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of* 1958.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	180.00‡	.....	.....	23.00i	.....	.095i	0.185i	.10wE	.19wE	.10i	.108i	0.198i
Birmingham	.....	62.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00ap	46.00ap	.22a	.46a	.105aPw	.24aPw	.105ao	.174aGo	.235aGo
Chicago	180.00‡	90.00‡b	3.95/4.00‡j	21.20b	31.20b	20.40bv	30.40bv	.975bwH	.1775bwH	.095b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	89.50d	6.30g	26.50A	.....	26.50Ax	.....	.1180AwF	.....	.....	.1180AG	.31AG
Dallas	e	40/78	e	26.35	45.39	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver	.....	58.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	116.00	.....	33.05	.....	32.45r	.....	13.50l	.....	.1123	.....	.28
Kansas City	e	e	e	16.80cl	.....	16.80v	.....	.0825cwJ	.....	.06c	0.125z	.....
Los Angeles	e	.....	e	22.50dmz	.....	22.50dmz	.....	24.00dzK	.....	23.00dz	.1038j	.2038j
Minneapolis	.....	.....	3.73h	26.00	.....	29.50v	.....	0.115w	.....	0.105	.134	.....
Montreal	e	e	e	32.50n	44.80n	.176n	.226n	18.70nwE	23.70nwE	.154n	.242nz	.27nz
New Orleans	.....	.....	.....	20.00s	.....e	20.00rr	.....e	.095rw	.....e	.085B	.095BL	.1905B
New York	.....	.....	3.50f	20.99m	42.94m	20.99st	40.94st	9.61uF	19.01uF	.....	9.68u	19.11u
Philadelphia	175/185	110/120	4.08	24.00	.....	24.00	.....	.11uF	.....	.105	.....	.....
Pittsburgh	60.00k	99.12in	6.35	32.40i	.....	32.40iz	.....	.1411i	.....	.141‡	.1411i	.....
St. Louis	.....	.....	.....	22.80f	.....	.1825	.....	.1035fwM	.....	0.165	.825	.....
San Francisco	.....	70.00x	.....	24.50g	41.50g	24.50gks	41.50gks	24.50gN	43.00gN	25.25sg	25.50yz	.2063y
Seattle	....	.....	.....	27.00x	42.00h	27.50x	.....	28.50K	.....	26.25hv	25.50xz	46.10hxz
Toronto	....	135.50	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: *b 3 x 3¼ x 8. *c 2¼ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 8# treat. *g 3" *h 2" tr, 8# *i 3 x 3¼ x 8½. *j 2¼", 6 lb. tr. *k Used. *l Redshale; *m Pine; oak $8.57. *n Truck del.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Wood River, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50–110 penetr. *l Less than 100 penetr. *m 40/300 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS, SS. *H RC 0–5 incl. *I MC 4. *J MC, RC $0.095 *K MC 3, 4 & 5. *L MS. *M MC 1–5, RC 1–5, $0.106. N MC 3. *O Truckland. *P F.o.b. refinery Savannah: $0.09/gal., tank cars: $0.20/gal., drums. *Q F.o.b. Eldorado, ARK.

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COMPANY

ADDRESS CITY

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COLUMBIA CALCIUM CHLORIDE

saves days on spring concrete schedules

The bucket drops the first pour. Only trouble—the job is already five days behind schedule. How to make it up? Columbia Calcium Chloride.

Ready mix treated with this all-weather set accelerator meets early strength specs *a minimum of 50% faster*. In general practice, normal three-day strength can be achieved within 24 hours. The same ratio holds true for ultimate strength.

It's still the chilly night season. Temperatures drop sharply after sunset. Effective all through the year, Columbia Calcium Chloride has particularly beneficial effects below 70° in preventing lag in concrete set. You'll be able to finish earlier, pull forms faster, make up the days that may have been lost earlier.

Wouldn't it be a good idea to analyze your present batching procedures, or check your ready mix supplier *today*? He can add Columbia Calcium Chloride at his plant or right on your job site.

Finishers get on and off without profit-ruining overtime.

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A Subsidiary of Pittsburgh Plate Glass Company

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Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ **Mass., Amherst**—LIBERAL ARTS CLASSROOM—BA 5/21—Commonwealth of Mass., Kenneth W. Johnson, treas., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U-802 liberal arts classroom for University of Massachusetts. $2,000,000. Plans deposit $150. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 11/14/56.

† **Me., Limestone**—AMMUNITION STORAGE FACILITIES—BA On Or About 5/23—U. S. Eng. Area Office, 562 Congress St., Portland, Me., ammunition storage facilities A.D.C. Type, Loring Air Force Base, ENG-19-016-58-150. $900,000-$1,000,000. Plans deposit $10. CD 9/17.

▲† **Mass., Chicopee Falls**—OPERATIONAL FACILITIES, etc.—BA On Or About 5/27—U. S. Eng., 150 Causeway St., Boston, operational alert apron, blast pavemenst and apron lighting, Westover Air Force Base, ENG-19-016-58-171. $1,000,000-$1,500,000. Plans deposit $10. CD 3/12.

HEAVY CONSTRUCTION—LB & CA

Seaboard Engineering Co., Inc., 65 Commercial St., Portland, Me., CA $560,695, est. $560,000, Contr 7, Pumping Station at Flood's Pond, BANGOR, ME. Bd. Trustees Bangor Water Dist., P. O. Box 804, Bangor, Me. Bids Apr. 4. CD 4/11, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 4/22.

J. F. Fitzgerald Constr. Co., 1000 Turnpike St., Canton, Mass., LB $838,752, est. $953,580, relocated Section Rte. 2-North Adams By-pass, U-248(3), North Adams. CD 4/3.

Continental Constr. Co., 87 Waite St., Extension, Malden, Mass., LB $429,412 est. $400,000, Contr. 246, constr. Section 2 of Linden-Brook Flood Control Area Proj., Revere and Malden, MASSACHUSETTS. Commonwealth of Mass., MDC Constr. Div., 20 Somerset St., Boston, Mass. Bids Apr. 24. CD 4/10.

Perini Corp., Marine Div., 62 Condor St., East Boston, Mass., LB $138,300, est. $120,300, dredging basin, Fore River at Metropolitan Yacht Club, Braintree, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Walter E. Rowley, West Wareham, Mass., engrs. Bids Apr. 22. CD 4/11.

Joseph Perry, 906 Hathaway Rd., New Bedford, Mass., CA $188,602, est. $231,800, stone groins and revetment, sand fill drainage, etc. at Rodney French Blvd., New Bedford, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Mar. 18. CD 3/28, under LB.

† **U. S. Eng.**, 150 Causeway St., Boston, Mass., cancelled bids to have been opened Apr. 24, combined crash and Structural Fire Station, Otis Air Force Base, ENG-19-016-58-137, FALMOUTH, MASS. $200,000-$300,000. CD 4/4.

▲ **Anderson-Fairoaks Constr. Co.**, 227 Newfield Ave., Hartford, Conn., LB $1,138,310 (3 bidders) Contract No. 371, masonry filters and regular house, at Filtration Plant No. 4, 40,000 cu. yd. embankment, etc., Farmington and West Hartford, HARTFORD, CONN. Metropolitan Dist. Bd. Control & Supply, 115 Broad St., Hartford, Conn. Bids Apr. 24. CD 4/10.

BUILDINGS—LB & CA

McKee Constr. Co., Pittston, Me., LB $573,120, Intermediate SCHOOL, East Side, AUGUSTA, ME. City, Supt. Schools, Stone St., Augusta, Me. Bids Apr. 22. CD 4/9.

▲ **Harvey Constr. Co., Inc.**, 1662 Elm St., Manchester N. H. CA Approx. $1,880,000 LIBERAL ARTS BLDG. on campus, DURHAM, N. H. University of New Hampshire, Office, President Thompson Hall, Durham, N. H. Bids Apr. 8. CD 4/11, under LB;
O. D. Purington Co., Inc., 49 Westminster St. Providence, R. I. CA $1,644,000 Basic Science Life Bldg. (Durham, N. H.)

Conti & Donahue Inc., 239 Commercial St., Lynn, Mass., LB $714,890, Contr. G-57-2, FACILITIES for Housing Archives at State House, BOSTON, MASS. Commonwealth of Mass., Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Apr. 25. CD 4/2.

Rocheford Constr. Co., P. O. Box 369, Farmingham, Mass., CA $545,900, est. $550,000, JUNIOR-SENIOR HIGH SCHOOL addn., COHASSET, MASS. Town, School Bldg. Comn., c/o Supt. Schools, Cohasset, Mass. Bids Apr. 16. CD 4/23, under LB.

Drick & Concrete Constr. Corp., 501 High St., Dedham, Mass., LB $549,000 HOUSING for the Elderly, Shed and Yardarm Sts., QUINCY, MASS. City, Housing Auth., 9 Bicknell St., Quincy, Mass. Bids Apr. 22. CD 3/28.

Richardi Constr. Co., Inc., 700 Berkshire Ave., Springfield, Mass., LB $658,900, est. $660,000 Blunt Park ELEMENTARY SCHOOL, SPRINGFIELD, MASS. City, Mayor's Office, Dpt. P. Bldgs., City Hall, Springfield, Mass. Bids Apr. 21. CD 4/4.

▲ **Gellatly Constr. Co.**, 181 Sylvan Ave., Bridgeport, Conn., CA Approx. $1,000,000, MANUFACTURING BLDG. imprvs. and modernization for mfg. of electric fans, BRIDGEPORT, CONN. General Electric Co., 1285 Boston Ave., Bridgeport, Conn. R. R. Popham, 430 E. 63rd St., New York, N. Y. archts. Awarded Apr. 24. CD 12/4.

▲ **Cedar Park, Inc.**, Stafford Ave., Bristol, Conn., Owner Builds, $1,395,000, 54 HOUSES "Sherman Park", BRISTOL, CONN. CD 8/2/56.

▲ **Laurel Co., Inc.**, 2348 Whitney Ave., Hamden, Conn., Owner Builds, $1,750,000, 70 HOUSES, Dunbar Hill Rd., HAMDEN, CONN.

F. W. Brown Co., Niantic, Conn., CA $628,861, Cedar Lake SCHOOL and JUNIOR HIGH SCHOOL, Foxon Rd., NORTH BRANFORD, CONN. Town of North Branford, School Bldg. Comn., North Branford, Conn. Bids Apr. 18. CD 4/24, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila.—BUTTERCUP COTTAGE—BA 5/12—Fairmount Park Comn., Belmont Office, City Hall, Bid 5979-Part I, General Bid 5980-Part II plumbing alterations addns. to Buttercup Cottage. Plans deposit $10. CD 2/3/47.

† **N. Y., Syracuse**—NATIONAL GUARD FACILITIES—BA 5/14—U. S. Property and Fiscal Officer, New York State Arsenal, 201 64th St., Brooklyn 20, installing woven wire fence and gates around fuel dump area for Air National Guard Facilities at Hancock Field, Inv. No. ENG-30-192-58-27. CD 2/29/56.

NEW JERSEY—BA 5/15—New Jersey Turnpike Auth., Admin. Bldg., New Brunswick,
Salem Co.—constr. 2,300 ft. 6 in. water main together with connections and appurtenant work at Services Areas LS and IN on New Jersey Turnpike, Oldmans Twp. Plans deposit $5, Elson T. Killam Assocs., Inc., 48 Essex St., Millburn, engr. CD 8/20/53.

New York—BA 5/15—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, furnishing del. thereof f.o.b. Tuscarora Power Plant area, University Siding, of generator main leads-isolated phase bus for Tuscarora Power Plant in Lewiston, Niagara Co. Spec. No. PA-N-25011, Niagara Contr. No. NP14. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15.

NEW JERSEY—BA 5/22—New Jersey Turnpike Auth., Admin. Bldg., New Brunswick,
Middlesex, Essex and Bergen Counties—constr. 2 addnl. toll lanes at Interchange 11, one addnl. toll lane at Interchange 15, and four addnl. toll lanes and addn. to utility bldg. at Interchange 18 on New Jersey Turnpike, Plans deposit $10, Barnett & Herenchak, Inc., 24 Commerce St., Newark, Zone 2, engr. CD 8/20/53.

† **N. Y., Romulus**—ENLISTED MEN'S SERVICE CLUB—BA 5/22 (tentative) U. S. Eng., 111 E. 16 St., New York, Zone 3, enlisted men's service club at Seneca Ordnance Depot, Serial No. ENG.-30-075-58-267. $150,000-$175,000. Plans deposit $25.

BUILDINGS—BA

D. C., Wash.—SCHOOL—BA 5/15—D. C. Govt. Dpt. Bldgs. and Grounds, 499 Pennsylvania Ave. N. W., Bryan Elementary School addn. 13th and Independence Ave. S. E. Plans deposit $50. Spector & Montgomery, 1073 W. Broad St., Falls Church, Va. archt.

▲ **N. Y., Mariners Harbor**—SCHOOL—BA 5/27—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for Junior High School 51, Houston St. and Willowbrook Rd., Graniteville, Richmond Boro. $3,287,750. Plans deposit $35 general contract, $10 each for trades. CD 6/23/55.

▲ **N. Y., New York**—SCHOOL—BA 5/27—Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for P. S. 198, East 96th St., Lexington and Third Aves., Manhattan Boro. $2,430,415. Plans deposit $25 for general contract, $10 each for plumbing, drainage and heating, $7 for electrical work. CD 9/9.

BUILDINGS—SLC

▲ **Pa., Drexel Hill** — HOSPITAL — George M. Ewing, archt.-engr., Western Savings Fund Bldg., Phila., soon lets contract hospital addn. for Delaware County Hospital, Drexel Hill. $900,000. CD 10/7.

Pa., Media—SHOPS—Massena & DuPont, archts., 704 Delaware St., Wilmington, Del., soon lets contract 5 shop bldgs. for Williamson Free School of Mechanical Trades, Media. $500,000. Lambert, McGee & Costello, 1629 Chestnut St., Phila., engrs. CD 4/2.

HEAVY CONSTRUCTION—LB & CA

The Whiting-Turner Contg. Co., Patapsco Tunnel, Baltimore 12, Md., LB $118,990 (7 bidders) furnishing, installing new uprights, foot walks, railing and misc. other imprvs. at Dam 11, Lock 15, on Erie Barge Canal about ½ mi. west of river bridge in Fort Plain, Montgomery Co., NEW YORK. Dpt. P. Wks., Public Relations Bureau, James Truex, dir., Albany, N. Y. Bids Apr 24. CD 3/27.
Oscar DeBree, Inc., 1200 Penfield Rd., Rochester 10, N. Y., LB $118,049 (8 bidders) repairing, rebuilding 2.52 mi. canal walls along north and south sides of Erie Barge Canal near Bushnell's Basin between Eastern Thruway connection and Cartersville Guard Gate in Monroe Co. (New York).

▲ **Channel Constr. Co.** (Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, **B. Perini Corp.**, Framingham, Mass. and **Walsh Constr. Co.**, 711 3rd Ave., New York, N. Y.) LB $31,855,000 (7 bidders) Section 4, waterways and reservoir and appurtenant works in Lewiston, Niagara Co., Contr. No. N8, Spec. No. PA-N-23005, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. CD 3/17.

Nat Harrison Assocs., Inc., 5137 N.E. 2nd Ave., Miami, Fla., CA $500,249 (3 bidders) lighting and power distr. facilities for Barnhart Island Park part of St. Lawrence Power Proj. near Massena, St. Lawrence Co., St. Lawrence Contr. No. SL-45, Spec. PA-5-14044, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Apr. 17. CD 4/21, under LB.

W. J. Irwin & Sons, Inc., Tonawanda, N. Y., CA $540,535, sanitary and storm sewers in Niagara and Lewiston, N-12, Niagara Project, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Apr. 22. CD 4/24, under LB.

Cody Constr. Co., Inc., 1044 East Tremont Ave., New York 60, N. Y., LB (A) $159,035 (B) $164,176 (8 bidders) Contr. BG-20350-156, playground between Utica Ave. and E. 49th St. south of Avenue N, Brooklyn Boro, BROOKLYN, N. Y. Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5th Ave., New York, Zone 21, N. Y. Bids Apr. 24. CD 4/17.

Cody Contr. Co., Inc., 1044 E. Tremont Ave., New York 60, N. Y., LB $113,575 (4 bidders) Contr. 585, laying, relaying sidewalks, setting and resetting curbs for George Washington Houses, NEW YORK, N. Y. President Manhattan Boro, 2034 Municipal Bldg., New York, Zone 7, N. Y. Bids Apr. 24. CD 4/17;
Edenwald Contr. Co., 151-45 6th Rd., Whitestone, N. Y., LB $155,795 (4 bidders) Contr. 186, regu-

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In Those Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

lating, grading, curbing and paving with 3 in sheet asphalt widened portions and repaving paved portions of roadways of E. 97th St., E. 99th St., E. 102nd St. and E. 104th St. from 2nd Ave. to 3rd Ave., also widening, curbing, paving with 3 in. sheet asphalt the widened portions of 2nd Ave. from E. 97th St. to E. 104th St., incl. adjustment of adjacent pavement together with all incid. work thereto, George Washington Houses, (New York, N. Y.).

† **Zephr Constr. Co.**, 7412 New Utrecht Ave., Brooklyn 4, N. Y., LB **$379,000** (11 bidders) ADC type AMMUNITION STORAGE FACILITIES (FY-1958 Program) Suffolk County Air Force Base, ENG-30-075-58-230, WESTHAMPTON BEACH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Gehron, Seltzer, Weiskopf & Pickworth, 101 Park Ave., New York, N. Y., archts. Bids Apr. 24. CD 3/31.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

Ben Constr. Co. & Allegheny Contg. Co., 101 Hargrove St., Pittsburgh, Pa. CA **$2,051,904**, widening 33,656 ft. existing road with c. conc. 22 ft. wide to make divided hy. LR 330-12 (Proj. 704-1) Int. State Jefferson and Pleasant Hills Boros, Allegheny Co. Bids Mar. 28, awarded Apr. 23. CD 4/2, under LB.

PENNSYLVANIA—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg,

S. P. Lightholder, 104 N. Central Ave., Canonsburg, Pa. CA **$675,461**, 29,506 ft. course aggreg. base with bit. surf. variable in width, alt. bridge superstructure, T.R. 138-308, Clay and Cherry Twps. W. Sunbury Boro, Butler Co. Bids Apr. 11, awarded Apr. 22. CD 4/17, under LB.

▲ **PENNSYLVANIA**—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg,

McCloskey & Co., 1620 W. Thompson St., Phila., Pa. CA **$4,410,534**, 3,820 ft. depressed divided hy. rein.-con. variable in width 4 plate girder bridges walls, Roosevelt Blvd. Exten. Phila., Phila. Co. Bids Mar. 27. CD 4/1, under LB.

Walter Eltz, Bethlehem Pike, White Marsh, Pa. CA **$697,874** Contr. 1, about 100,000 ft. sewer lines for White Marsh Twp. Sewer Proj., LAFAYETTE HILLS, PA. White Marsh Twp. Offices, Lafayette Hill, Pa. Bids Mar. 26. CD 4/3, under LB.

BUILDINGS—LB & CA

Green Constr. Co., 274 Madison Ave., New York 16, N. Y., LB **$878,700**, brick Municipal HOUSING between 21 and 23 Sts. and Broadway and 2 Ave., WATERVLIET, N. Y. City, Watervliet, N. Y. Bids Apr. 22. CD 3/25.

Mincini & Sons, Beach Haven, N. J., Separate contracts **$350,000**, RESIDENTIAL DEVELOPMENT, BEACH HAVEN, N. J., Paul B. West, Toms River, N. J., archt.

H. Gunther, P. O. Box 7192, Elkins Park, Pa., CA **$750,000**, 54 unit RESIDENTIAL DEVELOPMENT, Elizabeth Rd., etc., BORDENTOWN, N. J. Owner, c/o contractor.

Kikes Builders Inc., Friendship Rd., Lakewood, N. J., Separate Contracts, **$350,000**, RESIDENTIAL DEVELOPMENT. New Egypt Rd., etc., LAKEWOOD, N. J., Paul B. West, Toms River, N. J., archt.

Levitt & Sons, Inc., Levittown, Pa., Separate Contracts **$344,000**, ELEMENTARY SCHOOL, LEVITTOWN, N. J., Edward J. Scullen & Assocs., Bethesda, Md., engrs. H. Fred Gehrke, 221 Chester Ave., Moorestown, N. J., archt.

U. & R. Constr. Co., Box 326, Mount Holly, N. J., CA **$350,000**, RESIDENTIAL DEVELOPMENT, Mount Holly Twp., MOUNT HOLLY, N. J., Hampton Homes, Box 326, Mount Holly, N. J.

H. E. Stoudt & Son, Inc., 1212 S. 5th St., Allentown, Pa., CA **$500,000**, 69,027 sq. ft. MANUFACTURING BLDG., EASTON, PA. Delightform Mfg. Co., Inc., 321 Northampton, Easton, Pa. CD 12/12.

Lee Builders 285 W. Windermere Ave., Lansdowne Pa. CA **$500,000** SHOPPING CENTER, FOLSOM, PA. Ridley Park Shopping Center, Inc., c/o Leon Freedman, 285 Windermeere Ave., Lansdowne, Pa. Lambert McGee Costello, Inc., 1629 Chestnut St., Phila. Pa. engr.

United Constr. Co., 1204 Lincoln Ave., Pittsburgh 6, Pa., LB **$887,000** (8 bidders) general constr. JUNIOR-SENIOR HIGH SCHOOL bldg. for Freedom-New Sewickley Jt. School Dist., FREEDOM, PA. Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Apr. 22. CD 3/20.

Joseph E. Palmer, 37 N. Valley Rd., Paoli, Pa. Separate Contracts. **$576,000**, RESIDENTIAL DEVELOPMENT, Devon Rd., etc. PAOLI, PA. Thomson Whitaker Assoc., Devon, Pa., archts.

▲ **B. Bornstein & Son**, 2027 Arch St., Phila., Pa. LB **$1,720,000**, general contr. 189 units Whitehall HOUSING, Valley and Margaret Sts. (Pa-2-34) PHILA. PA. Phila. Housing Auth., 42 S. 15th St., Phila., Pa. Bids Apr. 15. CD 4/1.

▲ **J. Gross & Bros.**, 730 S. 5th St., Phila., Pa., Separate Contracts. **$1,500,000**, RESIDENTIAL DEVELOPMENT, Ridge Ave., etc., PHILA. PA.

Graver Tank & Mfg. Co., 4809 Todd Ave., East Chicago, Ill. Separate Contracts, **$500,000**, MANUFACTURING PLANT, EDGEMOOR, DEL. Abell-Howl Co., 53 W. Jackson Blvd., Chicago, Ill., archt.

McNichol Paving & Constr. Co., 52nd St. and Grays Ave., Phila. Pa. CA **$697,700** general contract elementary SCHOOL, 46th St. and Woodland Ave., PHILA. PA. Pa. Bd. Educ., 21st and Winter Sts., Phila. Pa. CD 3/20, under LB.

W. B. Gibson Co., 200 Chestnut St. N. E. Warren, O. LB **$759,393** general constr. MEN'S DORMITORY at Slippery Rock State Teacher's College, SLIPPERY ROCK, PA. General State Auth. 18th and Herr Sts. Harrisburg, Pa. Bids Apr. 23. CD 3/21.

John McShain Inc., 17th and Spring Garden Sts. Phila. Pa. LB **$862,800** general constr. Military, Air and Naval SCIENCE BLDG. for Pa. State University UNIVERSITY PARK, PA. General State Auth. 18th and Herr Sts., Harrisburg, Pa. Bids Apr. 23. CD 3/19

▲ **Rupert Constr. Co.**, 3400 Lancaster Ave., Wilmington Del., est. **$1,000,000**, JUNIOR HIGH SCHOOL, WILMINGTON, DEL. The Tatnall School, Barley Mill Rd. Wilmington, Del. CD 9/23.

F. & J. Tigani, 13th and Union Sts., Wilmington, Del. Separate Contracts. **$344,000**, RESIDENTIAL DEVELOPMENT, Llangollen Estates, WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Eglin Air Force Base**—AIRPORT IMPRVS.—BA On Or About 5/22—U. S. Eng., 2301 Grant St., Mobile, Ala., relocation of railroad and constr. new track, remove and relay approx. 8,000 existing track constr. 7,300 ft. new track, excav. clearing, drainage etc., ENG-01,076-58-99. CD 9/17.

BUILDINGS—BA

▲ **Fla., Tallahassee**—DORMITORY—BA 5/22—State Bd. Control, Education Bldg., Florida State University, Tallahassee, 10 story, ground floor, 132x213 CB and brick and RC., college house, men's dormitory, Proj. Fla. 8-Ch-14 (D). $2,000,000. Plans deposit $50. Guy C. Fulton Bldg. E., University of Florida, Gainesville, archt. Ebaugh & Goethe, 205 NW 10th Ave., Gainesville, mech. engrs. CD 4/21.

▲ **W. Va., Huntington**—GERIATRIC—BA 5/27—State Div. Purchases, Charleston, Zone 5, geriatric bldg., Huntington State Hospital. $1,400,800. Vecellio & Kreps, Odd Fellows Hall Bldg., Charleston, archts. CD 3/14.

HEAVY CONSTRUCTION—LB & CA

† **Ballenger Paving Co.**, Paris, S. C., LB **$797,000**, access parking area, Marine Corps Air Station, NBy 15301. Spec. 15301/58, CHERRY POINT, N. C. P. Wks. Officer, 5th Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Apr. 22. CD 3/26.

Charleston Constructors, Inc., Adger's Wharf, Charleston, S. C. LB **$506,939** bulk cargo handling facilities, CHARLESTON, S. C. S. C. States Ports Auth., 1 Vendue Range, Charleston, S. C. Lockwood Green Engineers, Inc., Montgomery Bldg., Spartanburg, S. C., engr. CD 12/17, under LB.

▲† **McDonough Constr. Co. of Georgia**, 7 Baltimore Place N. W., Atlanta, Ga. LB **$2,847,238** permanent facilities for 1 recruit battalion Marine Corps Recruit Depot, NBy 6496, Spec. 6496/56, PARRIS ISLAND, S. C. Dist. P. Wks. Office, Bldg. 13, U. S. Naval Base, Charleston, S. C. Bids Apr. 22. CD 5/8.

▲ **GEORGIA**—State Hy. Dpt., Capitol Sq., Atlanta, Ga.—**Acme Constr. Co.**, Cochran, Ga., CA **$783,488**, widen, reconstr. and resurf. 13.149 mi. on what is

(Continued on page 92)

NOW, 3 NEW FORD INDUSTRIAL ENGINES . . .

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Meet the new Ford Super Heavy Duty V-8's . . . built to handle the big jobs easier, at less cost. The most modern in the industry, they feature new high-turbulence combustion chambers . . . new fuel induction systems . . . new lubrication systems . . . and provide more horsepower per pound of engine weight than ever before possible.

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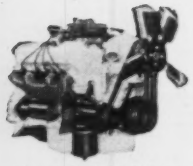
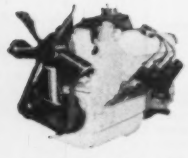
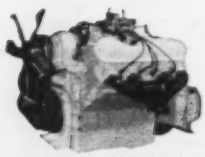


Ford "534" V-8



Ford "477" V-8



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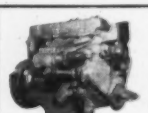
Ford "272" V-8

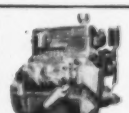
Ford "223" 6-cyl.

Ford "172" 4-cyl.

Ford "134" 4-cyl.



Ford "330" Diesel 6-cyl.



Ford "220" Diesel 4-cyl.

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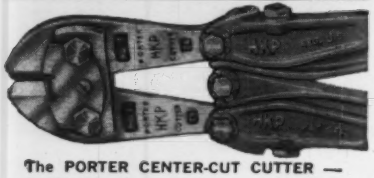

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H. K. PORTER, inc.
Somerville 43, Mass.

(Continued from page 90)

locally known as Louisville Augusta Rd. State Rte. 4 beginning at point near the Jefferson Co. line and extending NE FAP F-043-1 (13) Richmond Co.;

Ga.—**Wainer Constr. Co., Inc.**, Box 1172, Valdosta, Ga., CA **$1,419,910**, grading, divided lane paving and 3 bridges located in Richmond Co., Ga. and Aiken Co., S. C., on what is locally known as Augusta, Ga.-Aiken S. C. Road, State Rte. 21 beginning at present bridge over Southern R.R. in North Augusta and extending south to present contract, FAP U-UG-015 1 (9), Richmond Co., Ga. and Aiken Co., S. C. Bids Dec. 14. CD 12/19, under LB.

† **R. H. Smalling's Sons**, 801 Forsyth St., Macon, Ga., CA **$232,941**, base communications bldg., Robins Air Force Base, IFB, ENG-09-133-58-34, MACON, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. CD 9/18.

▲† **Southern Roadbuilders, Inc.**, P. O. Box 1129, Augusta, Ga., CA **$2,128,431**, constr. apron, operational, heavy, Robins Air Force Base, IFB ENG-09-133-58-33, MACON, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. CD 9/18.

▲† **Fred Howland, Inc.**, 1451 NW 20th St., Miami, Fla., Bid Item 1, Total A & B CA **$2,908,803**, Contr. 5-C, service bldg., Miami International Bldg., MIAMI, FLA. Dade Co. Port Auth., Bd. Comrs. Court House, Miami, Fla. Bids Apr. 22. CD 3/28;
Astor Elec. Service, Inc., 1836 West Ave., Miami Beach, Fla., LB **$203,218**, Contr. No. 12, street lighting for access roads and parking lots, Miami International Airport, (MIAMI, FLA.) CD 4/16.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

Miss.—**R. G. Brown, Jr. & Co.**, Louisville, Miss., CA **$455,621**, est. $530,000, grade, drain, culverts, topping 11.218 mi. and 2 bridges on US Hy. 45 between Hattiesburg and Collins. Proj. F-008-2 (5), Covington Co.;

Miss.—**Hyde Constr. Co.**, Jackson, Miss., CA **$1,546,344** est. $1,115,000, cement and lime treated sub-grade, topping, base and rein.-con. pavement 14.261 mi. between Jackson and Flora, US Hy. 49. Proj. F-008-3 (4), Hinds and Madison Counties;

Miss.—**Burdine Constr. Co.**, Greenville, Miss., CA **$380,041**, est. $385,000, grade, drain, topping, culverts, c. conc. pavement 1.652 mi. US Hy. 49 west thru Belzoni, Proj. F-010-1 (4), Humphries Co.;

Miss.—**L & A Contracting Co.**, Hattiesburg, Miss., CA **$460,631**, est. $560,000, grade, drain, culverts, topping, base, double bit. surf. treatment 1.016 mi. incl. 3 bridges Mississippi Hy. 7 between Water Valley and Oxford, Proj. F-019-2 (2), Lafayette Co.;

Miss.—**J. A. Hadley Contractor**, Humboldt, Tenn., CA **$274,533**, est. $285,000, incid. grade and drain, topping 1 bridge and double b. surf. treatment 6.138 mi. Mississippi Hy. 444 between Round Lake and Duncan, Proj. S-0600 (2) A, Colivar. Grand total $3,117,-170. Bids Apr. 22. CD 4/11.

KENTUCKY—State Hy. Dpt., State Hy. Comn., Frankfort, Bids opened 4/18,

R. R. Dawson Bridge Co., Bloomfield, Ky., LB **$327,-367** (4 bidders) c. conc. 0.318 mi. and traffic bound macadam, Haddix-Altro-Gays Creek Road, bridge over north fork of Kentucky River and approaches near Haddix, ER 13 (1) SP 13-267, Breathitt Co. CD 4/3.

▲ **KENTUCKY**—State Hy. Dpt., State Hy. Comn., Frankfort, Bids opened 4/18,

Ky.—**Mago Constr. Co.**, Bardstown, Ky., LB **$99,941** (3 bidders), b. conc. resurf. 15.282 mi. various roads, SP Group 35 (1958) Grant, Harrison and Pendleton Counties; LB **$109,291** (5 bidders), b. conc. resurf. various roads 18.45 mi. SP Group 36 (1958), Mason and Robertson Counties;

Ky.—**Kelly Constr. Co.**, 317 Wallace Ave., St. Matthews, Ky., LB **$76,303** (4 bidders), b. conc. resurf. 11.051 mi. Hazard-Chavies-Buckhorn Road, SP Group 44 (1958) Perry Co.; LB **$87,581** (4 bidders), b. conc. resurf. 13.135 mi. Jacksonville-Salyersville Rd. SP Group 45 (1958), Breathitt Co.;

Ky.—**Corum & Edwards, Inc.**, Madisonville, Ky., and **N. C. Snider**, Danville, Ky., LB **$1,225,965** (7 bidders), b. conc. 11.626 mi. Owensboro-Whitesville (Ky. 54) Road from approx. 0.7 mi. east of east corporate limit of Owensboro, extending easterly to point approx. 0.2 mi. west of west limits of Whitesville, SP 30-57, S 206 (1), Davies Co.; LB **$94,675** (5 bidders), b. conc. resurf. various roads 15.341 mi. SP Group 28 (1958), Trigg and Caldwell Counties;

Ky.—**Ralph Rogers & Co., Inc.**, Bloomington, Ind., LB **$90,982** (3 bidders), b. conc. resurf. various roads SP Group 29 (1958), Muhlenberg Co.;

Ky.—**Cantrill Constr. Co., Inc.**, 700 N. Broadway, Lexington, Ky., LB **$117,050** (4 bidders), b. conc. resurf. various roads 18.367 mi. SP Group 33 (1958), Knox and Whitney Counties;

Ky.—**L. P. Cavett Co.**, 511 Shepherd Ave., Lockland 15, O., LB **$73,640** (7 bidders), bit. road mix resurf. 15.368 mi. Liberty-Somerset Road. SP Group 40 (1958), Casey Co. CD 4/3.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, Munsey Bldg., Wash., D. C. CA Est. **$4,500,000** WAREHOUSE and PACKING PLANT, NORFOLK, VA. Colonial Stores, Inc., 321 Dunmore St., Norfolk, Va. CD 12/28/56.

† **Hugh G. Strickland**, Box 4162, Winston Salem, N. C., LB **$463,400** (2 bidders) 27 HOUSING UNITS, U. S. Naval Facility, NBy (CH) 15165-FHA Proj. No. 053-81024, Navy 9, Cape Hatteras, BUXTON, N. C. Bureau Yards & Docks, Navy Dpt., Arlington, Va.

▲ **Cole Bldg. Corp.**, 940 Lincoln Rd., Miami Beach, Fla., Owner Builds, **$1,000,000**, three 2 story 84 units, APARTMENTS, south side of Lincoln Rd. and Biscayne Bay, MIAMI BEACH, FLA. Henry Hohauser & Assocs., 4011 Chase Ave., Miami Beach, Fla., archts. CD 3/7.

O'Brien & Padgett, 283 Scott Ave., Memphis, Tenn., LB **$962,323** (9 bidders), FEDERAL OFFICE (lease-purchase) GREENVILLE, MISS. General Services Admin., P. Bldgs. Service 19 and F Sts. N. W., Wash. 25, D. C. Bids Apr. 22. CD 3/22.

▲ **Lake Charles Air Conditioning, Inc.**, Lake Charles, La., LB **$1,375,923** (8 bidders), POST OFFICE and COURT HOUSE, LAKE CHARLES, LA. General Services Admin., P. Bldgs. Service, 19 and F Sts. N.W., Wash 25, D. C. Bids Apr. 23. CD 3/25.

▲ **Daniel Constr. Co.**, 429 North Main St., Greenville, S. C., CA Est. **$4,000,000**, 1-2 story, concrete block, steel, corrugated asbestos siding, steel joist built up roof, 65,000 sq. ft. CHEMICAL PLANT, OWENSBORO, KY. Dewey & Almy Chemical Co., 62 Whittemore St., Boston, Mass. Lockwood Greene, 316 Stuart St., Boston, Mass., engrs.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

O., **Cincinnati**—BA 5/13—City, City Hall, west branch, Muddy Creek interceptor sewer. $450,000. Plans deposit $10. Havens & Emerson, Leader Bldg., Cleveland, engrs. CD 3/12/57.

▲ O., **Cleveland**—DOCK IMPRVs.—BA 5/15—City, Dpt. Port Control, Wm. J. Rogers, dir., City Hall, Zone 14, site preparation for pier at W. 6th St., $1,500,000-$2,000,000. Plans deposit $75. Osborn Eng. Co., 7016 Euclid Ave., Zone 3, engr. CD 10/28, under LB.

BUILDINGS—BA

▲ Ill., **Hinsdale**—SCHOOL—BA 5/12—Bd. Educ., 55th and Grant Sts., high school addn., and swimming pool, 75th and Clarendon Hills Rd., $2,000,000. Fugard Burt Wilkinson & Orth, 520 N. Michigan Ave., Chicago, archts. CD 9/25.

▲ Ill., **Elgin**—SCHOOL—BA 5/15—Elgin Bd. Educ., 353 E. Chicago, 1 and 2 story, brick, West Side Junior High School, McLean Blvd., Demmond Ave., Melrose and Oakley Ave., $1,500,000. LeRoy Thompson, 355 Congdon, archt. CD 9/5.

Ind., **Indianapolis**—SCHOOL OF DENTISTRY—BA 5/15—Trustees of Indiana University, office of J. A. Franklin, vice-pres. and treas., Bloomington, School of Dentistry addn. and alteration, $800,000. Plans deposit $75. Daggett, Naegele & Daggett, Inc., 567 W. Westfield Blvd., archt. Ammerman, Davis & Stout, Inc., K of P Bldg., engr. E. P. Bardwell, Indiana University, Bloomington, University's architectural coordinator. CD 9/6.

▲ O., **Columbus** — SCHOOL — BA 5/15 — Columbus Bd. Educ., 270 E. State St., Johnson Park Junior High School. Approx. $1,000,000. Dan. S. Carmichael, 5 E. Long St., archts. CD 3/18.

▲ Ind., **South Bend**—SCHOOL—BA 5/26—City of South Bend, 228 S. St. Joseph St., Washington High School and swimming pool, W. side of city. Mauer & Mauer, LaFayette Bldg., archts. CD 8/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb., LB **$1,976,572**, constr. New Richmond Cofferdam, Locks New Richmond Locks and Dam Proj., Ohio River, near Chilo, ENG-46-022-58-41, OHIO-KENTUCKY. U. S. Eng., 237 4th Ave., Huntington 18, W. Va. Bids Apr. 24. CD 4/1.

▲ **OHIO**—State Hy. Dpts., State Office Bldg., Columbus,

O.—**Sutton & Stewart, Inc., and Hatcher Bros., Inc.**, 841 National Rd., Bridgeport, O., CA **$1,118,862**, est. $1,311,600, Type T-71 and structures, 1.760 mi. Proj. SR 45-(18.80-19.04) FOFG-576 (6) Columbian Co.;

O.—**The Peirce Constr. Co.**, 3005 Bellevue Rd., Toledo, O., CA **$5,060,949**, est. $5,532,300 Type T-71 and structures, 9.784 mi. Proj. USR 25-17-.48-0.00 ACI 196 (7) Miami and Shelby Counties;

O.—**V. N. Holderman & Sons**, 890 Oakland Park Ave., Columbus, O., CA **$2,399,672** est. $2,604,100 Type T-71 and structures, 4.948 mi. SR 1017.97 0.00 ACL 1105 (21) Morrow and Richland Counties. Bids Apr. 15. Grand total $8,580,482. CD 4/24, under LB.

Ferrell Constr. Co., 716 Figueroa Place, Canton, O., LB **$547,520**, est. $754,000 (8 bidders) aeration-filtration plant at northwest water field, CANTON, O. City, City Hall, Canton, O. Havens & Emerson, 640 Leader Bldg., Cleveland 14, O., engrs. Bids Apr. 21. CD 3/24.

† **L. R. Skelton**, 3099 Sullivant, Columbus, O., LB **$467,-869**, est. $506,666. Air National Guard runway and apron facilities Springfield Municipal Airport, SPRINGFIELD, O. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. Bids Apr. 23. CD 3/28.

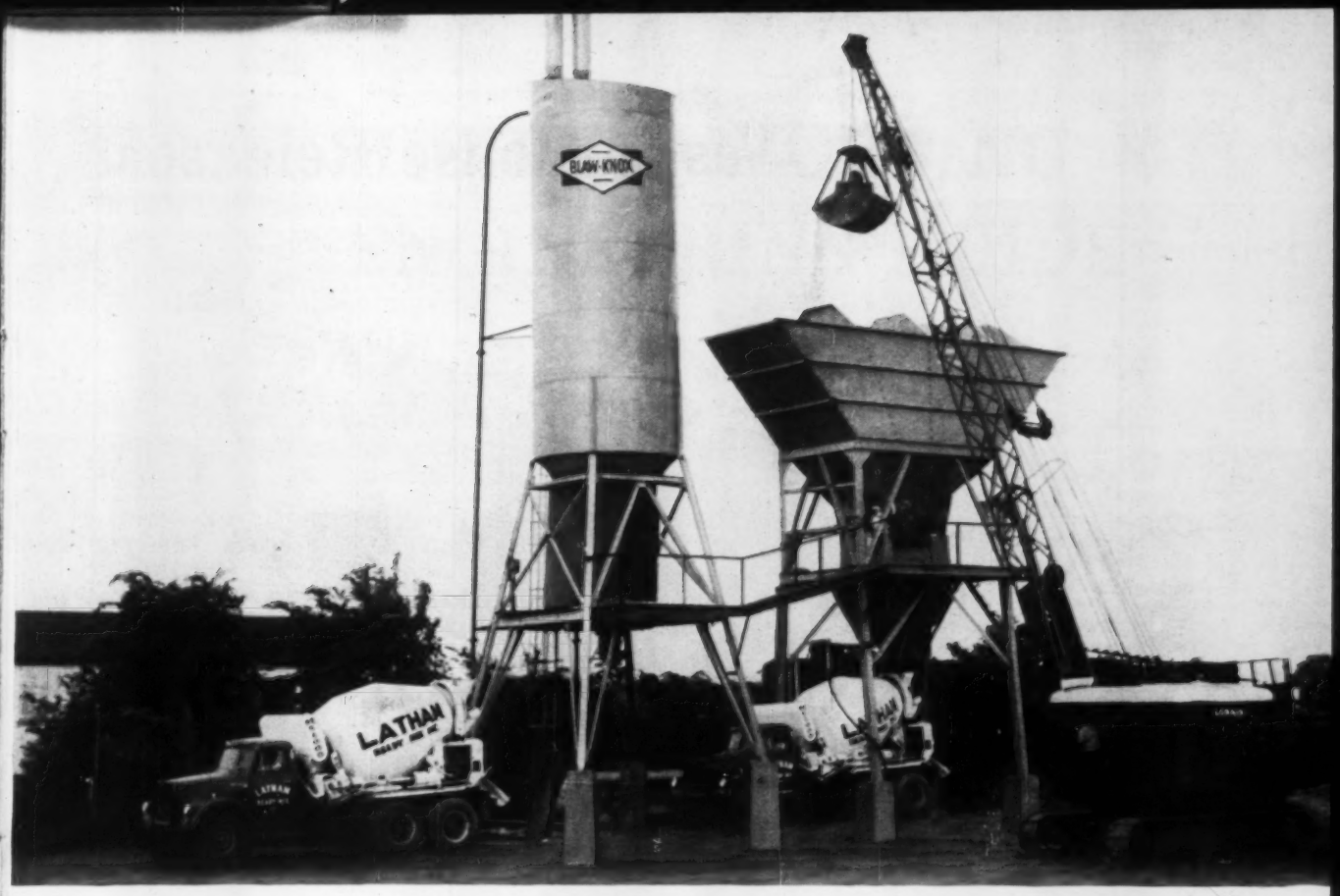
Owen-Ames-Kimball Constr. Co., 38 Pearl St. N. W., Grand Rapids, Mich., LB **$619,911**, parking structure, Bond and Lyon N. W., GRAND RAPIDS, MICH. City, Municipal Park Facility, Grand Rapids, Mich. Donker Eng. Co., 158 Bostwick, Grand Rapids, Mich., archt. CD 5/25/55.

BUILDINGS—LB & CA

▲ **Charles V. Maescher & Co. Inc.**, 2106 Florence St., Cincinnati, O., CA **$3,000,000**, four 3 and 4 story APARTMENTS, CINCINNATI, O. Owner, c/o G. E. Mayer, 2706 Observatory Rd., Cincinnati, O. Cyrus L. Baxter & Assocs., Oak and Chestnut Sts., Cincinnati, O., archts.

▲ **H. W. Miller Constr. Co.**, Covington, Ky., LB **$1,117,-000**, constr. Mount Washington SCHOOL, CINCINNATI, O. Bd. Educ., 608 E. McMillan St., Cincinnati, O Bids Apr. 22. CD 3/26.

(Continued on page 96)



On Route 9, the main highway between Albany and Montreal, contractors Frank and Roger Clemente are operating a Blaw-Knox package—consisting of a 4-compartment, 150 ton aggregate bin equipped with 6-yard batcher, a 600 barrel cement plant, and four new 6-yard Hi-Boy Truck Mixers.

Blaw-Knox Batch Plant–Truck Mixer package picked by Latham Ready Mix, Inc.

New entry into Ready Mix business likes Blaw-Knox responsibility, service, and features

"We had a variety of equipment to choose from," says Frank Clemente, of Latham Ready Mix, Inc., an upstate New York operator, "but outstanding features of the Blaw-Knox Ready Mix equipment were definite buying factors. One of them is the well designed, accurate water system of the Blaw-Knox truck mixers.

"The Blaw-Knox people took special interest in getting us started. They supplied us with excellent equipment and all the service we needed to start operations on a paying basis. Besides we liked the idea of doing business with a company responsible for *all* the equipment."

This kind of personal service from Blaw-Knox distributors and factory personnel is helping operators all over the nation to bigger profits in the booming ready-mix market. If you're in the ready-mix business or thinking about it, your Blaw-Knox distributor can be a big help. Why not talk it over with him soon? No obligation, of course.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division

41 Charleston Avenue, Mattoon, Illinois

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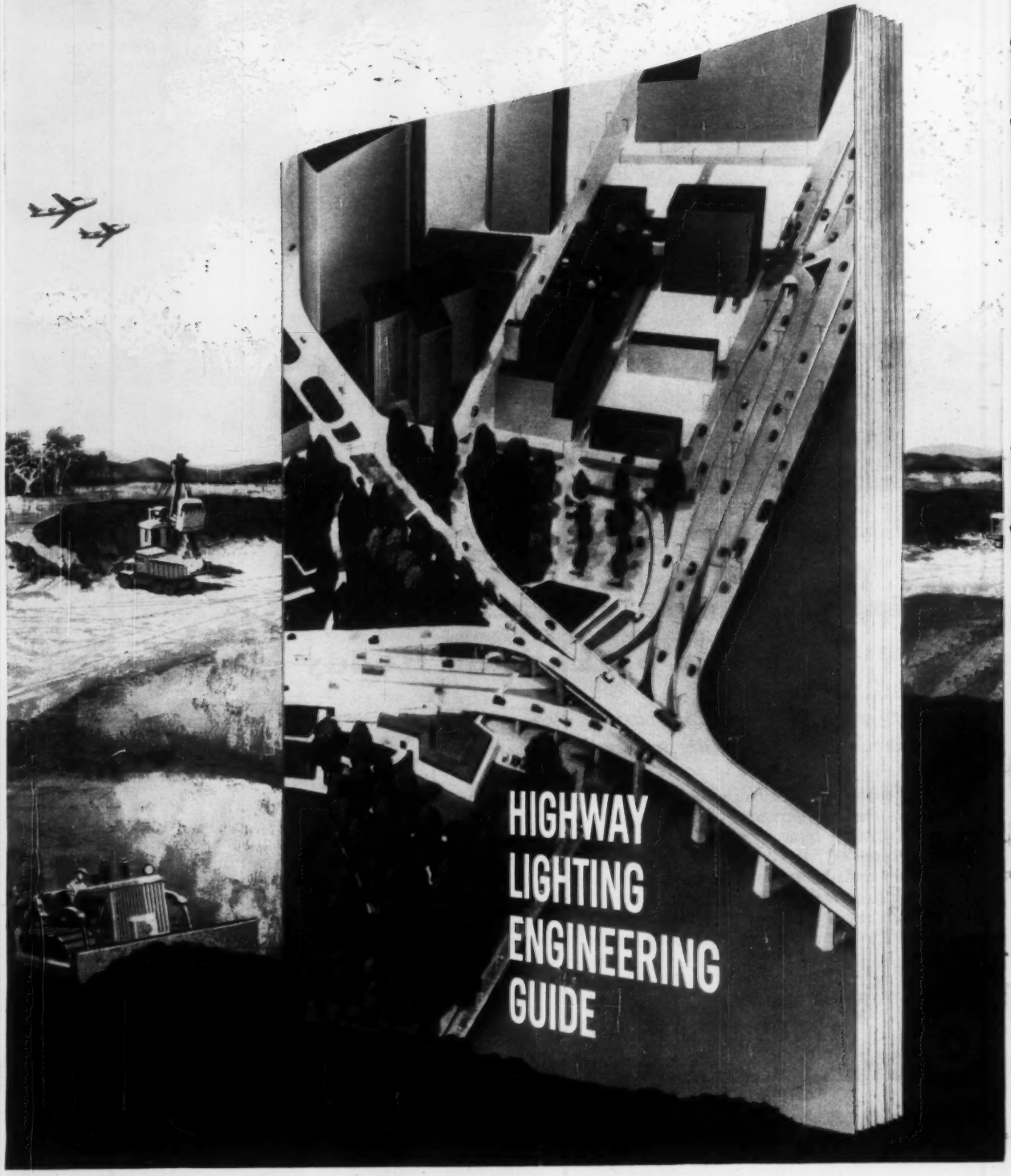

FIRST HIGHWAY LIGHTING ENGINEERING GUIDE

FREE to Engineers—Contractors—
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Interstate Highway progress indicates huge "Programming" projects—in all but a few states—*expected soon!*

Engineers, literally by the thousands, will soon be detailing highway plans to accommodate 1975 traffic!—for travel at speeds of 70 miles per hour or more! —and for driving as *safe* during nighttime as it can be in bright daylight!

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It enumerates relative lighting costs —giving examples of well-known Westinghouse highway installations.

It summarizes all data necessary to select the correct light source—the proper optical system—and the most suitable electrical components. Furthermore, this book provides a simplified form to help you organize your own lighting-analysis calculations.

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This book contains all the information available from Westinghouse exclusive experience and knowledge—gained in having consistently led all others in the design and development of utmost efficient roadway lighting—at lowest practical costs!

To get your copy—simply address Westinghouse Electric Corporation, LIGHTING DIVISION, Highway Lighting Department, Edgewater Park, Cleveland, Ohio. DO IT TODAY! J-04449

Every Assistance Volunteered to All
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Moreover, Westinghouse makes scientifically superior luminaires for every type application—provides all electrical components, including: transformers, oil switches, controls and poles.

Westinghouse will help you get the best possible combination of all components for each specific situation—consistent with the lowest possible practical costs today!

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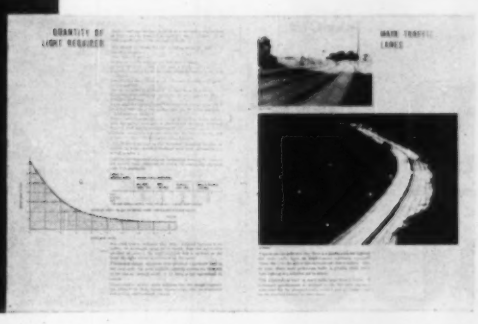
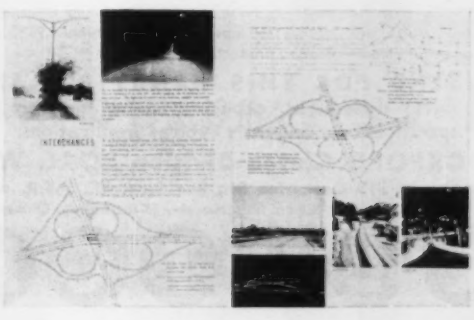




(Continued from page 92)

Kent Bros., 22 E. Gay St., Columbus, O., CA $872,547, general and electrical contracts Pleasant View HIGH SCHOOL, COLUMBUS, O. South-Western School Dist., 1390 Harrisburg Pike, Columbus, O. CD 2/13.

▲ Schaffer Bros., 1600 Fall Ave., Cleveland 13, O., CA $2,000,000, 30 units Potter Village SHOPPING CENTER, corner Routes 12 and 19, FREMONT, O. Potter Village Inc., c/o Schaffer Bros. Co., 1600 Fall Ave., Cleveland 13, O. Damon Worley Samuels & Assocs., Engineers Bldg., Cleveland 14, O. archts.

▲ Midwest Builders, 2199 S. Green Rd., Cleveland, O., Own Forces, $2,850,000, 160 HOMES off SOM Center Rd., opposite Eastgate Shopping Plaza, MAYFIELD HEIGHTS, O. Jos E. McStean, 13947 Cedar Rd., Cleveland, 18, O. consult. engr. CD 4/4/57.

† George A. Rutherford Co., 2725 Prospect Ave., Cleveland 15, O., CA $891,000 (4 bidders) SERVICE BLDG. at Plum Brook Arsenal Works, SANDUSKY, O. National Advisory Committee Aeronautics, 1512 H. St. N. W., Wash., D. C. Bids Mar. 21, awarded Apr. 17, CD 4/9.

H. Kaplan & Sons, Inc., 4226 Tennessee St., Gary, Ind., Own Forces, $400,000, 20 HOMES, streets, curbs, gutters, and sewers, 49th and Maryland Sts. GARY, IND.

Glen L. Ryan Assocs., Inc., 651 New Jersey St., Gary, Ind., Own Forces $750,000, 75 HOMES, 4100 block on Miller and 600 block on New Jersey Sts., GARY, IND.,

▲ Oliver L. Parks Realty Co., Inc., 815 St. William St., Cahokia, Ill., Owner Builds, $2,500,000, constr. 333 addnl. RESIDENCES in St. John's Gardens along Rte. 3 south of St. Joseph's Gardens, incl. streets, sanitary sewers, CAHOKIA (East St. Louis P. O.), ILL.

Sherman Oison, Inc., 219 N. Kilpatrick, Chicago, Ill., CA $750,000, 5 story brick, addn. to FACTORY BLDG. 8, 2444 W. 16th St., CHICAGO, ILL. Phoenix Metal Cap Co., 2444 W. 16th St., Chicago, Ill. CD 4/1.

▲ Campbell Lowrie Lautermilch, 400 W. Madison St., Chicago, Ill., CA $2,000,000, 1 story, 170,000 sq. ft. brick, steel, paper converting PLANT, JOILET, ILL. Olin Mathieson Chemical Corp., Forest Products Div., P. O. Box 488, West Monroe, La. F. H. McGraw Co., 51 E. 42nd St., New York, N. Y., engr. CD 2/14.

Hunzinger Constr. Co., 4577 N. 124 St., Milwaukee 10, Wis., CA EST. $500,000, BOWLING ALLEY-BAR BLDG., BROOKFIELD, WIS., G. J. Schaut, 13001 W. Blue Mound Rd., Brookfield, Wis. D. L. Grieb, 316 E. Silver Spring Rd., Milwaukee, Wis., archt.

W. M. C. Inc., Winona, Minn., LB $618,432 (6 bidders), general contract HOSPITAL addn. alteration, LA CROSSE, WIS., La Crosse Lutheran Hospital Assn., 1910 South Ave., La Crosse, Wis., Bids Apr. 17, CD 3/19.

▲ Fred Teitelbaum Constr. Co., 5526 N. Kedzie Ave., Chicago, Ill., CA $2,000,000, 225,000 sq. ft. PLANT, MELROSE PARK, ILL. Reflector-Hardware Corps., 2245 S. Western Ave., Chicago, Ill. A. Epstein & Sons Inc., 2011 W. Pershing Rd., Chicago, Ill., archt.

J. P. Cullen & Son, 330 E. Eastern Ave., Janesville, Wis., CA $800,000, general contract boys' RESIDENCE HALL, PRAIRIE DU CHIEN, WIS., Campion Jesuit High School, Prairie du Chien, Wis., Bids Apr. 16, CD 4/9.

Klug & Smith Co., 4425 W. Mitchell St., Milwaukee, Wis., CA EST. $400,000, 1 story, 136 x 407 ft., concrete, steel concrete blocks WAREHOUSE addn., WAUWATOSA, WIS. Roundy's Inc., 11300 W. Burleigh St., Wauwatosa, Wis. Bids Apr. 10, CD 4/3.

Consolidated Constr. Co., 800 Marquette St., Bay City, Mich., CA $450,000, MEDICAL CENTER, Mulholland and 16th Sts., BAY CITY, MICH. East Medical Center, Bay City, Mich. Brysselbout & Starke & Assoc. Inc., 202 Commercial Exchange, Bay City, Mich., archts.

Lathrop Constr. Co., 202 M A C, East Lansing, Mich., LB $883,388, general contract HIGH SCHOOL, GRAND LEDGE, MICH. Bd. Educ., Grand Ledge P. Schools, Grand Ledge, Mich. Bids Apr. 9. CD 3/14.

▲ Walter O. Couse & Co., 12740 Lyndon, Detroit, Mich., CA $1,409,000, HOSPITAL, LIVONIA, MICH. St. Mary's Hospital Bd., Livonia, Mich. Bids Apr. 1. CD 3/4.

Alfred A. Smith, Inc., 721 East Saratoga Ave., Ferndale 20, Mich., CA $924,537, JUNIOR HIGH SCHOOL, Orangelawn and Royal Grand Aves., REDFORD, MICH. Bd. Educ., South Redford Dist., 26255 Schoolcraft Rd., Detroit, Mich. Bids Apr. 9. CD 3/20.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† South Dakota—BA On Or About 6/5—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., constr. superstructure of Chicago Milwaukee, St. Paul & Pacific R. R. Missouri River Bridge near Mobridge Oahe Reservoir Proj., Pierre, ENG-25-066-58-118. CD 9/5, under Earthwork, etc.

BUILDINGS—BA

Mo., Rolla—APARTMENTS—BA 5/21—Curators of University of Missouri, Dale O. Bowling, bus. mgr., Rm. G-1, Parker Hall, School of Mines & Metallurgy, Rolla, 4 married students apartment dormitory bldgs. containing 48 apartments, each 2 story, on Campus of Missouri School of Mines & Metallurgy. $492,000. Hellmuth, Obata & Kassabaum, Inc., 315 N. 10 St., St. Louis, Zone 1, archt. DC 2/4.

▲ Mo., Columbia—APARTMENTS—BA 5/22—Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, Mo., 18 two story married students apartments containing 192 apartment suites on campus of University. $2,000,000. Hellmuth, Obata & Kassabaum, Inc., 315 N. 10 St., St. Louis, Zone 1, archt. CD 1/30.

▲† Tex., Medina Base—HOUSING—BA 5/22—U. S. Eng., 606 Santa Fe Bldg., Galveston, Title VIII NHA Capehart Housing (125 units) Medina Base, ENG-41-243-58-32. Less than $2,250,000. Advanced bid date. CD 4/16.

▲ Tex., Midland—SHOPPING CENTER—Bids Asked—Delvin, Inc., Midland, shopping center. $1,500,000. Fehr & Granger, 403-E. 15th St., Austin, archts. CD 2/12.

HEAVY CONSTRUCTION—LB & CA

▲† Geo. L. Cousins Contg. Co., 875 N. Skinner Blvd., St. Louis 5, Mo., CA $1,014,727, est. $1,352,130, floodwall and closure structure Cape Girardeau Flood Protection Proj., Item III-A (1), Cape Girardeau, ENG-23-065-58-32, MISSOURI. U. S. Eng., 422 Locust St., St. Louis 2, Mo. Russell & Axon, 408 Olive St., St. Louis 2, Mo., consult. engrs. Bids Mar. 11. CD 1/15, under LB.

† Korshoj Constr. Co., Blair, Neb., CA $723,338, shops and maintenance bldgs., Contr. No. DA-25-066-ENG-4818 (IFB ENG-25-066-58-90), Minot Air Force Base, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 3/12.

TEXAS—State Hy. Comn., Austin,
Cooper & Woodruff, Inc., 204 Mays Bldg., Amarillo, Tex. CA $628,953 reconstr., grading, structures base and surf. 10.084 mi. Hy. RM 1061 Proj. C 1245 2-7 and B 4-2-3, Potter Co. Bids Apr. 15, awarded Apr. 22. CD 4/21, under LB.

TEXAS—State Hy. Comn., Austin, Bids opened 4/16,
Tom Tellepsen, P. O. Box 2536, Houston, Tex. CA $768,317, shell concrete base and b. conc. 0.850 mi. Hy 1H 10. Proj. I 1052 (37) Chambers Co. Awarded Apr. 22. CD 3/28.

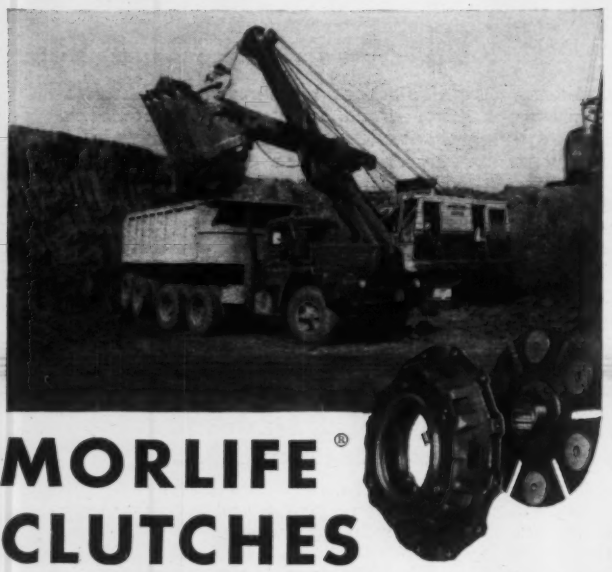
† Elmer C. Gardner, Inc., Box 19071, Houston, Tex. CA $603,565 Gulf Intracoastal Waterway Bridge over re-aligned Rte. Aransas Pass, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Apr. 17. CD 4/24, under LB.

▲† H. B. Zachry Co., P. O. Box 10188, San Antonio 21, Tex. CA $2,530,324 N-S Runway "A" Exten. runway primary/instrument, Taxiway 10 and Taxiway 11; airfield lighting storage base avfuel, medium A/C washrack, Reese Air Force Base, ENG-41-443-58-35. LUBBOCK, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth 2, Tex. Bids Apr. 10, awarded Apr. 22. CD 4/14, under LB.

† V & N Constr. Co., Box 834, Lubbock, Tex., LB $442,156, ammunition storage, air defense, Walker Air Force Base, Inv. ENG-29-005-58-83, ROSWELL,

(Continued on page 98)

ROCKFORD



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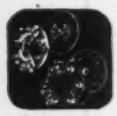
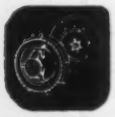
Because ROCKFORD Morlife Clutches handle double the amount of torque handled by ordinary friction clutches, they enable design engineers to reduce the effect of centrifugal force developed by modern, high-speed engines. By cutting down the required diameter of the clutch, they reduce weight. By insuring better heat disposal, they multiply the clutch's work-life. While your next model is in the planning stage, it will pay you to investigate how this new type clutch will improve the operation and eliminate 90% of the clutch service requirements of your product.


Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc


Heavy Duty Over Center

Power Take-Offs

Speed Reducers

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Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

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CLUTCHES

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Twin-Power all-wheel drive scrapers get more work done and move the cheapest dirt on every kind of job.

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2 engines—518 total h.p.
All-wheel drive
One-man operation
32 yd. heaped capacity (24 yds. struck)
2 Torqmatic Drives
NoSpin differentials
27.00 x 33 tires (33.5 x 33 optional)

Harrison Construction Co. of Pittsburgh was awarded the grading contract for expansion of the Baltimore & Ohio classification yard near Cumberland, Maryland. As part of the earthmoving fleet for this 1¾ million yard job, Harrison used two Euclid TS-24 Twin-Power Scrapers. One-way hauls varied from 2500′ to 5900′ with some up to 2 miles long. In spite of knee-deep mud in some areas, these "Eucs" were able to pull through and maintain steady production. To get capacity loads in the shortest distance, pusher tractors were used in heavy shale—the "Twins" self-loaded in better material.

Whenever your construction requires earthmoving, it can be done faster and at lower cost with "Eucs". The Euclid dealer in your area will be glad to give you details on the complete line and show you why ***Euclids are your best investment.***

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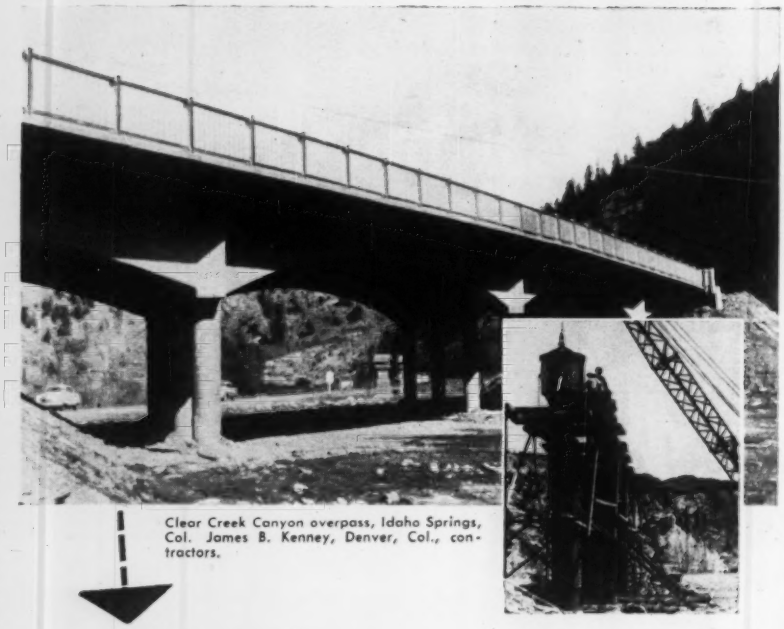
FOR MOVING EARTH, ROCK, COAL AND ORE

Hold down cost of concrete bridge piers!



Clear Creek Canyon overpass, Idaho Springs, Col. James B. Kenney, Denver, Col., contractors.

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These easy-to-handle forms require minimum bracing and save many man-hours on the job.

Low-cost Sonoco Sonotube Fibre Forms provide the quickest and most economical means of forming round columns of concrete.

Contractors all over the country are using Sonotube Fibre Forms in the construction of piers for bridges, overpasses and grade separations.

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Available from 2" to 48" I.D. up to 48' long. Order in specified lengths or saw to size on the job. Sonoco's patented "A" coated fibre forms are for finished columns; wax-coated also available.

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- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO Construction Products

2845 SONOCO PRODUCTS COMPANY

(Continued from page 96)

N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 10. CD 4/4.

BUILDINGS—LB & CA

▲ **John Epple Constr. Co.**, 1417 Hickory St., Columbia, Mo., CA $2,620,600, 6 story, bsmnt., brick, steel, concrete, etc. addn. to Boone Co. HOSPITAL, COLUMBIA, MO. Boone County Hospital Bd. Trustees, Charles H. Trimble, pres., Columbia, Mo. Bids Apr. 16. CD 4/23, under LB.

▲ **Nabholz Constr. Co.**, Conway, Ark., CA $1,072,328 cottage type SCHOOL for mentally retarded children, CONWAY, ARK. Arkansas Children's Colony Bd., Conway, Ark. Bids Apr. 2, awarded Apr. 21. CD 4/8, under LB.

† **Kay Eng. Co.**, 220 NE 38th St., Oklahoma City, Okla., CA $649,947, Contr. 57-914, air-conditioned fluorescent lighting, etc., U. S. POST OFFICE and COURT HOUSE, OKLAHOMA CITY, OKLA. General Services Adm., Region 7, Dallas, Tex. Awarded Apr. 15.

Fox & Jacobs Constr. Co., 2714 McKinney, Dallas, Tex. Owner Builds. $389,900, 20 DWELLINGS; $355,500, 15 DWELLINGS in Park Forest Subdivision, DALLAS, TEX. CD 4/11.

▲ **Henry C. Beck Co.**, 503 1st National Bank Bldg., Dallas 2, Tex. CA Est. $3,000,000, 12 story, bsmnt. OFFICE, DALLAS, TEX. Blue Cross & Blue Shield of Texas, 2208 Main St., Dallas, Tex. (Correction—contractor's name). CD 3/18, under CA.

Spaw-Glass, Inc., 2411 Times Blvd., Houston, Tex. CA Est. $450,000, WAREHOUSE, Bissonnet St., HOUSTON, TEX. Bekins Van & Storage Co., 5342 E. Mockingbird Lane, Dallas, Tex. CD 2/4.

Cole Creek Manor, Northwest Builders, Inc., c/o P. E. Boyd, Cole Creek Manor Subdivisions, 1822 Watercrest St., Houston, Tex. Owner Builds. $371,000, 37 DWELLINGS; $361,115, 32 DWELLINGS, off Lang Rd., HOUSTON, TEX. CD 4/11.

▲ **Harmon Constr. Co.**, Box 1414, Oklahoma City, Okla. CA Est. $2,000,000, 13 story and part bsmnt. OFFICE, MIDLAND, TEX. Midland Savings & Loan Assn., 300 W. Wall St., Midland, Tex. CD 4/25.

Quincy Lee Constr. Co., 211 Olmos Dr., West, San Antonio, Tex. Owner Builds. $363,300, 33 DWELLINGS; $378,500, 36 DWELLINGS, in Greenhill Village, SAN ANTONIO, TEX. CD 4/14.

Lowe Constr. Co., 2325 9th Ave., N., Billings, Mont. CA $715,000, 2 story, bsmnt., 70x144 ft. rein.-con. BANK bldg., HELENA, MONT. Union Bank & Trust Co., Helena, Mont. Bids Feb. 4, awarded About Apr. 20. CD 2/17, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

Wash., Seattle—PARKING LOT—BA 5/15—University of Washington, Seattle, Zone 5, grading, surf. parking lots on east side of Montlake Blvd. $445,000. Worthington & Skilling, Lloyd Bldg., engrs. CD 10/13/54.

▲ **Calif., Los Angeles**—BA 5/23—Los Angeles Co. Flood Control Dist., 2250 Alcazar St., constr. Arroyo del la Sacatela Storm Drain, Bond Issue Proj. No. 57, Unit 1. $2,000,000. CD 11/7/52.

▲ **Calif., Sacramento**—BA 6/3—Sacramento Municipal Utility Dist., 2101 K St., 4 mi. 14 ft. diameter tunnel for SMUD Upper American River Proj. CD 1/8.

▲† **Oregon**—BA 6/3—Bureau Reclamation, Dpt. Interior, P. O. Box 386, Camp White, furnishing labor and materials. Emigrant Dam Enlargement, Rogue River Basin Proj., near Ashland, Jackson Co., Spec. No. DC-5044. CD 9/17.

▲ **Calif., Los Angeles** — ACTIVITY AND SERVICE BUILDING, BA 6/25—Bd. Supervs., Los Angeles Co., 501 Hall of Records, activity and service bldgs. at following parks; Bloomfield Park, Artesia, Sorenson Park, West Whittier, Live Oak Park, Temple City, Rivera Park, Rivera; Valleydale Park, Azusa Mountain View Park El Monte, $1,000,000.

BUILDINGS—BA

▲ **Calif., Los Angeles**—SCHOOL—BA 5/20—Bd. Educ., 1425 S. San Pedro St., constr. Grant High School in SE San Fernando Valley. $3,900,000. Extended date. CD 4/9.

▲† **Calif., Camp Pendleton**—CENTRAL HEATING SYS.—BA 5/21—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, central heating sys. at Camp Margarita, Marine Corps Base, Spec. 11686-57. $1,000,000. CD 9/19.

▲† **Utah, Ogden**—TEST CELL—BA 5/26—Marquardt Aircraft Co., 7735 Kester Ave., Van Nuys, Calif. test cell bldg. at Marquardt Jet Laboratory, Spec. MJ1 500-5. $3,000,000. Plans deposit $250. CD 4/30/57.

▲ **Ore., Portland**—LIBRARY—BA 5/27—Bd. Higher Educ., University of Oregon, Eugene, Library for Portland State College, $1,237,000. Lawrence, Tucker & Wallmann, Failing Bldg., archts. CD 2/10.

BUILDINGS—SLC

▲ **Wash., Seattle** — OFFICE — University Properties, Inc., White-Henry-Stuart Bldg., Zone 1, soon lets contract furnishing, erecting 2,700 tons structural steel framing for 20 story office bldg., $8,500,000, Naramore, Bain, Brady & Johanson, 904 7 Ave., archts. CD 8/13.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Boise, Bids opened 4/15, **Cherf Bros., Inc. and Sandkay Contractors,** Ephrata, Wash., LB $1,535,334, constr. 4-lane divided roadway, bit. surf. treatment, two 245 ft. concrete underpasses and 2 concrete overpasses 4.4 mi. U. S. 30 and furnish crushed gravel in stockpiles, Power Co. CD 4/2.

† **Matich Bros., M. M. Sundt Constr. Co., M. J. Bevanda,** 6950 Tujunga Ave., North Hollywood, Calif. LB **$826,843** (3 bidders) runway exten. and Taxiway No. 16 at Williams Air Force Base, ENG-04-353-58-62, CHANDLER, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 22. CD 8/23/56.

▲† **N. Fiorito Co.,** 844 W. 48 St., Seattle, Wash., LB **$1,173,985,** est. $1,244,270, (3 bidders), constr. operational apron at Larson Air Force Base, Inv. 58-25, Schedule A, MOSES LAKE, WASH., U. S. Eng., City-County Airport, Walla Walla, Wash., Bids Apr. 23, CD 3/13;
L. Miller, Inc., 5324 E. Lancaster St., Fort Worth, Tex., LB **$1,446,184,** est. $1,576,767, (10 bidders), hydrant refueling sys., Schedule B, (Moses Lake, Wash.).

▲† **A. Teichert & Son, Inc.,** Box 397, Baldwin Park, Calif. CA **$1,198,940,** est. $1,400,000 Santa Anita Wash Channel imprvs. from Atchison, Topeka & Santa Fe R. R. to Rio Hondo Channel, ENG-04-353-58-15, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 27, awarded Apr. 18. CD 4/1, under LB.

▲† **M. H. Golden Constr. Co.,** 3485 Noell St., San Diego, Calif. LB **$1,594,000** (4 bidders), school bldg. and auditorium at Naval Amphibious Base, Spec. 7407-56, CORONADO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Apr. 10. CD 3/6.

▲† **N. P. Van Valkenburg,** 1627 N. Chico Ave., El Monte, Calif. CA **$1,031,844** rehabilitate Cooke Air Force Base, Phase III, Fy 58, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 27. CD 3/31, under LB.

Bethlehem Pacific Coast Steel Corp., 6000 Alcoa Vernon, Calif. LB **$440,869,** est. $476,000, (9 bidders), furnish, fabricate and erect structural steel for Long Beach County Bldg., LONG BEACH, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Apr. 16. CD 7/24/56, under Public Bldgs.

▲† **Matich Bros., M. M. Sundt Constr. Co., M. J. Bevanda, Inc.,** 6950 Tujunga Ave., North Hollywood, Calif. CA **$1,223,094,** est. $1,300,000 (joint venture) apron access taxiway, ENG-04-353-58-60, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 15, awarded Apr. 18. CD 4/17, under LB.

† **Robinson & Wilson,** 179 4th St., San Bernardino, Calif. LB **$631,139,** est. $650,000 airmen's dormitories at Norton Air Force Base, ENG-04-353-58-59, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 22. CD 4/3.

† **E. I. Noxon Constr. Co.,** 2700 W. 3 St., Los Angeles, Calif. LB **$639,964,** est. $1,000,000 (11 bidders) airmens dormitories at George Air Force Base, ENG-04-353-58-58, VICTORVILLE, CALIF. U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 18. CD 3/20.

BUILDINGS—LB & CA

Bowers Bldg. & Constr., 2260 S. 3 East, Salt Lake City, Utah. LB **$891,978** general constr. East Mill Creek JUNIOR HIGH SCHOOL, SALT LAKE CITY, UTAH. Granite School Dist., 3212 S. State St., Salt Lake City, Utah. Bids Apr. 15. CD 3/19.

h. Halvorson, Inc., 20054 Pacific Hy. S., Seattle, Wash., LB **$439,717,** (7 bidders), general contract 47,063 sq. ft. masonry addns. to HIGH SCHOOL, PORT ANGELES, WASH., School Dist. 17, Port Angeles, Wash. Bids Apr. 22.

G. E. Teufel Co., White-Henry-Stuart Bldg., Seattle 4, Wash., CA **$877,994,** general contract JUNIOR HIGH SCHOOL, SEATTLE, WASH. Shoreline School Dist. 412, E. 158 St. and 20 Ave. N. E., Seattle, Wash., Bids Feb. 26. CD 3/5, under LB.

J. Young, c/o B. McCool & Assocs., archts. 9700 Roosevelt Way, Seattle, Wash., Day Labor, **$350,000,** 4 story, 48-unit rein.-con. APARTMENT, 100 Valley St., SEATTLE, WASH., CD 3/17.

▲ **Paul B. Emerick Co.,** 4540 S. E. 174th Ave., Portland, Ore., CA **$2,756,000,** WOMEN'S DORMITORY AND DINING HALL, MEN'S DORMITORY, Oregon State College, CORVALLIS, ORE. Oregon Bd. Higher Educ., University of Oregon, Eugene, Ore. Bids Apr. 17, awarded Apr. 22. CD 4/23, under LB.

▲ **Waldo S. Haride & Son,** 191 Park Ave., Eugene, Ore., CA **$1,377,000,** general contract, MEN'S DORMITORY, University of Oregon, EUGENE, ORE. Bd. Higher Educ., University of Oregon, Eugene, Ore. Bids Apr. 3, awarded Apr. 22. CD 4/8, under LB.

Relleum Constr. Co., 8600 Firestone Blvd., Downey, Calif. Owner Builds. **$400,000,** 8 two story APARTMENTS, BELLFLOWER, CALIF.

▲ **Robert E. McKee, General Contractor,** 4700 San Fernando Rd., Los Angeles, Calif. CA **$2,774,000** general constr. permanent facilities at YOUTH TRAINING SCHOOL, incl. administration, clinic hospital, chapel, housing unit gymnasium, swimming pool, kitchen commissary, shops, etc. CHINO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Grand total $4,408,427. Bids Apr. 16, awarded Apr. 22. CD 4/18, under LB;
Hickman Bros., Inc., 3170 E. 11th St., Los Angeles, Calif. CA **$1,110,150** mechanical work (Chino, Calif.); **Mel Dennett Electric** 376 D. St., San Bernardino, Calif. CA **$524,277** electrical work (Chino Calif.).

Teyssier & Teyssier, 1357 7th Ave., San Diego, Calif. CA **$896,566** 3 story, 60 bed addn. to Palomar Memorial HOSPITAL, ESCONDIDO, CALIF. Northern San Diego Co. Hospital Dist., 550 E. Grand Ave., Escondido, Calif. Bids Mar. 11, awarded Apr. 17. CD 3/24, under LB.

Slattebo Corp., 5175 W. Washington, Los Angeles, Calif. LB **$683,240** est. $800,000 (11 bidders) CLASSROOM and ADMIN. BLDGS. at Lynwood High School LYN-

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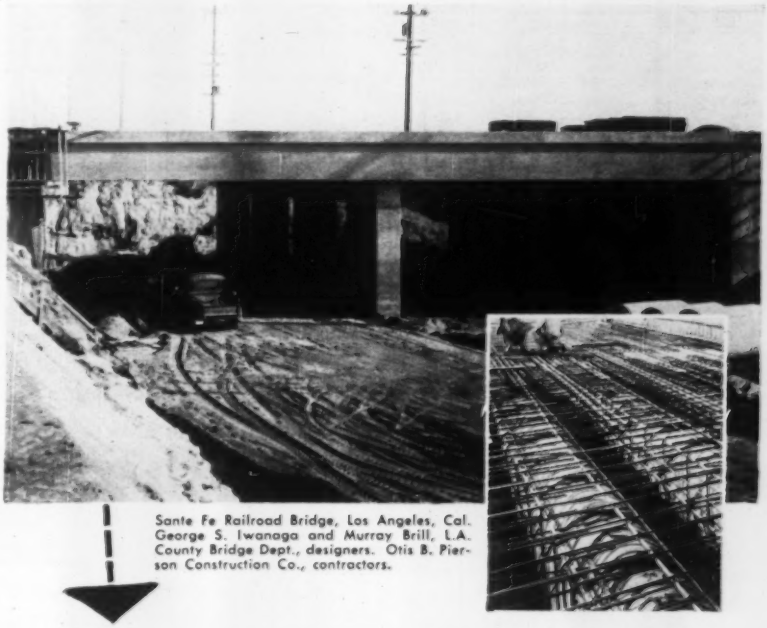

Sante Fe Railroad Bridge, Los Angeles, Cal. George S. Iwanaga and Murray Brill, L.A. County Bridge Dept., designers. Otis B. Pierson Construction Co., contractors.

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WOOD, CALIF. Lynwood Unif. School Dist., 11321 Plaza Lynwood, Calif. Bids Apr. 22. CD 4/10.

▲ **Continental Constr. Co. & Lawrence Constr. Co.,** 4671 24th St. Road, Sacramento, Calif. CA **$4,297,000** Sched. A, constr. OFFICE BLDG. and parking facilities on S St. near 61st St., SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 2101 K St., Sacramento, Calif. Bids Apr. 8, awarded Apr. 24. CD 4/10, under LB.

▲ **Kemp Bros., George K. Thompson,** 8750 Mettler St. Los Angeles, Calif. CA **$1,219,000** 2nd phase 5 story rein.-con. addn. to San Bernardino County HOSPITAL, SAN BERNARDINO, CALIF. Bd. Supervs. San Bernardino Co., Courthouse, San Bernardino, Calif. Bids Mar. 31, awarded Apr. 21. CD 4/7, under LB;

J. & Q. Plumbing Co., 5833 Jurupa Ave. Riverside, Calif. CA **$524,568** mechanical work (San Bernardino,

H. & L. Homes, Inc., 7499 Bagdad St., San Diego, Calif. Owner Builds. **$862,560** 72 frame, stucco DWELLINGS, Salizar Antiem and Ashford Sts., Vista Mesa Annex Tract No. 1, SAN DIEGO, CALIF.

CANADA

BUILDINGS—BA

▲ **Ont., Peterborough**—HOME FOR AGED—BA 5/13—St. Joseph's Order, Diocese of Peterborough, (selected list of bidders) 3 story, bsmnt., L-shaped structure, 68 x 190 ft. and 68 x 183 ft. rein.-con., brick exterior Home for Aged, poured concrete fdn. $1,000,000. Chester C. Woods, 2842 Bloor St. W., Toronto, archt. Ralph C. Manning, 745 Mt. Pleasant Rd., Toronto, engr. CD 2/26.

Que., Montreal—CENTRAL AUTOMATIC MESSAGE ACCOUNTING—BA 5/14—Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, 3 story, bsmnt., 69x171 ft. with 37x46 ft. wing, frame, brick walls with stone trim central automatic message accounting bldg., rein.-con. fdns., SE corner Pine and Oxenden Aves. Over $350,000. Durnford, Bolton, Chadwick & Ellwood, 4101 Sherbrooke St. W., archts.

Que., Montreal—HOSTEL—BA 5/14—Salvation Army in Canada, 1495 Drummond St., 4 story, no bsmnt., E-shaped, 142x148 ft. overall dimensions, men's hostel, SW corner Guy and St. Antoine Sts. $950,000. Comber, Comber & Mack, 4493 Sherbrooke St. W., archts. CD 1/27.

Ont., St. Thomas—NURSING RESIDENCE—BA 5/21—St. Thomas-Elgin General Hospital Bd., St. Thomas, 2 story, partial bsmnt., 90x170 ft., load-bearing walls, brick faced concrete block, 300 ft. long with two wings, nurses' residence. $837,000. Govan, Ferguson, Lindsay, Kaminker, Langley & Keenleyside, 10 Prince St., Toronto, archts. G. Duncan Black, 6 Princess St., St. Thomas, engr. CD 1/31.

BUILDINGS—SLC

▲ **Ont., Brantford**—PLANT—Brantford Coach & Body Ltd., 22 Mohawk Rd. soon lets contract, 80,000 sq. ft. tractor assembly plant. $1,250,000. A. D. Margison & Assocs. Ltd., 30 Eglinton Ave. E., Toronto, engrs. CD 1/16.

▲ **Sask., Regina** — WAREHOUSE — Saskatchewan Govt. Telephones, Regina, soon lets contract, 72,600 sq. ft. concrete, brick warehouse, Cornwall St. $1,000,000. Stock, Ramsay & Assocs., 2041 Hamilton St., archts.

HEAVY CONSTRUCTION—LB & CA

Arthur A. Voice Constr. Co. Ltd., 10263-112th St., Edmonton, Alta., LB **$398,845** (5 bidders) Contract No. 139, 132nd Ave. Interceptor Sewer, EDMONTON, ALTA. City, City Hall, Edmonton, Alta. Bids Apr. 9. CD 4/10.

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,

John Laing & Son (Canada) Ltd., 640 W. Hastings St., Vancouver, B. C., CA **$2,117,267,** Contract No. 3 of Second Narrows bridge involving toll plazas ramps, rein.-con. overpasses, brick deck, admin. bldgs., Burrard Inlet, Vancouver-North Vancouver. Bids Apr. 2. CD 4/10, under LB.

▲ **Dibblee Constr. Co., Ltd.,** 384 Bank St., Ottawa, Ont., CA **$1,206,547,** reconstruction and widening approx. 1.6 mi. existing streets and 6 lane divided highway, Carling Ave. from Tweedsmuir to Woodroffe Aves., OTTAWA, ONT. City, City Hall, Ottawa, Ont. Bids Apr. 1. CD 4/10, under LB.

▲ **Desourdy Constr. Ltee,** 170 Dorchester St. E., Montreal, Que., CA About **$3,050,000,** trunk sewer works, etc., MACKAYVILLE, QUE. Town, Town Hall, Mackayville, Que. Awarded Apr. 18. CD 1/6/56.

BUILDINGS—LB & CA

▲ **Dominion Constr. Co. Ltd.,** Calgary, Alta., Owner Builds, **$10,000,000,** 10 story, rein.-con. OFFICE BLDG., 7th Ave. and 3rd St. West, CALGARY, ALTA. Dominion Constr. Co. Ltd., c/o owner, engr.

▲ **Sam Hashman & Co. Ltd.,** Calgary, Alta., CA **$1,400,000,** APARTMENT PROJECT, 19 masonry bldgs., Glendale area, CALGARY, ALTA. Tower Realty & Investments Ltd., Calgary, Alta. Abugov & Sunderland, 909-15th St., Calgary, Alta., archts. Awarded Apr. 17.

▲ **Bennett & White Constr. Co., Ltd.,** 660 Howe St., Vancouver, B. C., LB **$1,222,817** (4 bidders) alterations, addns., steel, concrete Kitsilano Secondary SCHOOL, AUDITORIUM, GYMNASIUM, etc., 10th and Trafalgar, VANCOUVER, B. C. Vancouver School Bd., 1595 W. 10th Ave., Vancouver, B. C. Bids Apr. 15. CD 3/19.

Bird Constr. Co. Ltd., Sargent and Erin Sts., Winnipeg, Man., CA **$519,113,** Government Bldg., OFFICE, THE PASS, MAN. Manitoba Dpt. of P. Wks., Legislative Bldg., Winnipeg, Man. Bids Mar. 28, awarded Apr. 16. CD 4/8.

▲ **Canadian Bechtel Ltd.,** 25 King St., W., Toronto, Ont., CA Est. **$45,000,000-$50,000,000** OIL REFINERY, incl. crude oil distillation units, a fluid catalytic cracking unit, gas recovery unit, hydrogen plant, catalyctic reformer, hydro desulphurizer, boiler plant and about 50 bulk storage tanks for crude oil and refined products, also a wharf and a pipe line connecting dock and refinery main administration bldg. warehouse, etc. SAINT JOHN, N. B. Irving Oil Co. Ltd., main office, 71 Dock St., Saint John, N. B.;

Irving Oil Co. Ltd., main office, 71 Dock St., Saint John, N. B., Owner Builds, **$750,000,** 130,000 sq. ft. concrete, brick, concrete walls, steel frame rein.-con. WAREHOUSE, Chesley St., SAINT JOHN, N. B. Ross, Patterson, Townsend & Fish, 65 Prince William St., Saint John, N. B., archts.

▲ **E. G. M. Cape & Co. (1956) Ltd.,** 79 Scollard, Toronto, Ont., CA Total est. **$15,000,000,** cigarette FACTORY, GUELPH, ONT. Imperial Tobacco Co. of Canada Ltd., 3810 St. Antoine St., Montreal, Que. Bids Mar. 14. CD 2/24.

Romeo Constr. Ltee, 3161 Belanger St. E., Montreal, Que. Owner Builds. **$800,000,** four 3 story, bsmnt., 28 suites, 60x100 ft., concrete and brick walls, APARTMENT BLOCKS, rein.-con. fdns., MONTREAL, QUE.

Bousquet Constr., Inc., 10023 Waverly Ave., Montreal, Que. Owner Builds. **$750,000,** 3 DUPLEXES, Bois Franc Rd. and O'Brien Blvd., MONTREAL, QUE. Jean B. Chicoine, 5669 de Lorimier St., Montreal, Que., archts.

ALASKA

HEAVY CONSTRUCTION—BA

† **Alaska**—BATTERY COMMUNICATIONS FACILITIES—BA 5/6—U. S. Eng., 1519 S. Alaskan Way, Seattle, Wash., inter-battery communications facilities at eight Nike guided-missile installations in Fort Richardson-Elmendorf, Eielson and Ladd Air Force Bases, Inv. 58-34. Extended date. CD 3/27.

BUILDINGS—LB & CA

† **Inlet Constr. Co.,** Anchorage, Alaska, CA **$430,000** (4 bidders) 14 classroom Fairview ELEMENTARY SCHOOL, ANCHORAGE, ALASKA. School Bd., Anchorage, Alaska. Bids Apr. 18. CD 4/9.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲† **Williams Brothers Co. & Telescopic Pipe Line,** National Bank of Tulsa Bldg., Tulsa, Okla., CA **$3,050,000,** 174 mi. 10 in. and 44 mi. 8 in. crude lines, Sicasica, Bolivia to Arica, Chile, BOLIVIA—CHILE, Yacimientos, Petroliferes Fiscales, Bolivanos, Sicasica, Bolivia.

(Continued on page 102)

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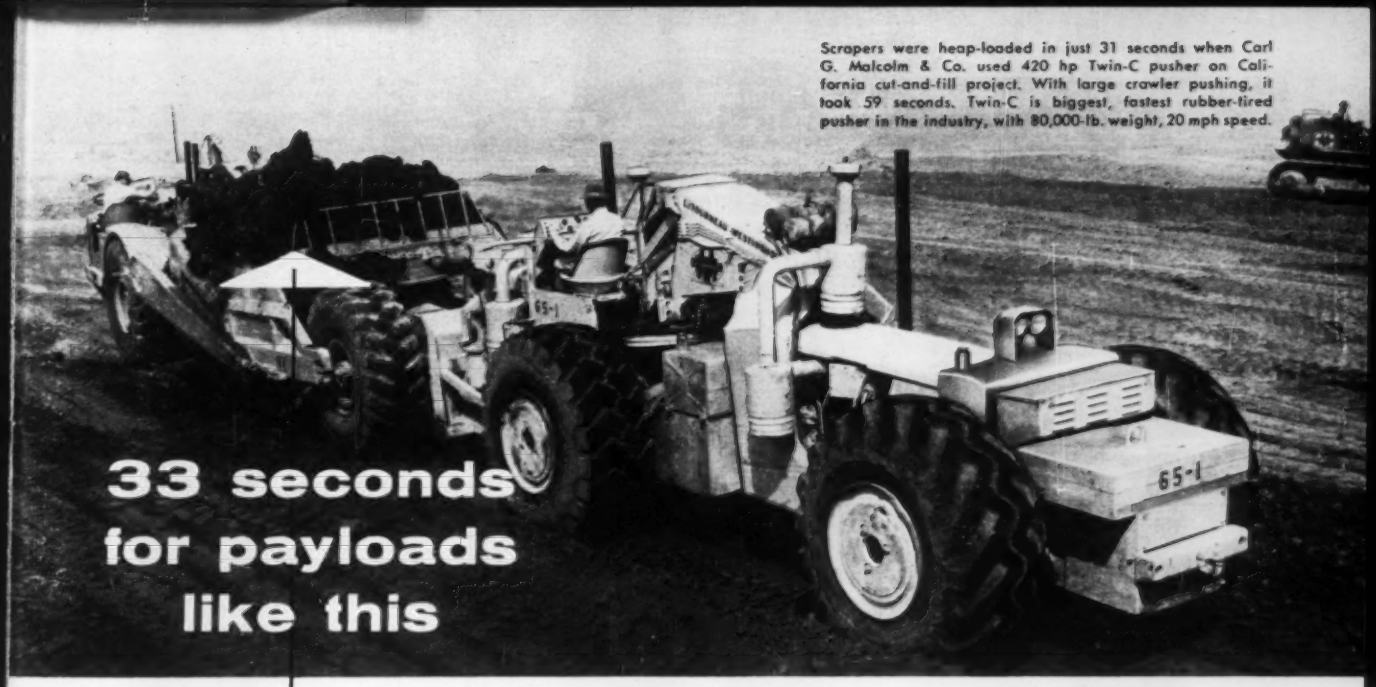

Scrapers were heap-loaded in just 31 seconds when Carl G. Malcolm & Co. used 420 hp Twin-C pusher on California cut-and-fill project. With large crawler pushing, it took 59 seconds. Twin-C is biggest, fastest rubber-tired pusher in the industry, with 80,000-lb. weight, 20 mph speed.

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QUICK POSITIONING: Fast forward speeds, instant shift get Twin-C close to scraper in a hurry. Scraper can drop bowl any place in the cut, and Twin-C is ready to push in seconds.

FASTER LOADING: Matched speeds of scraper and pusher let scraper operator take moderate cuts at higher forward speed... heap bowl sooner.

BIGGER PAYLOADS: Greater forward momentum of scraper at faster speed packs dirt more firmly into bowl; eliminates voids and insures maximum pay-yards.

LONGER TIRE LIFE: Because pusher and scraper have matched speeds, there's little tire slippage. Less spinning adds to tire life on both scraper and pusher.

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BETTER PIT CONDITIONS: Twin-C makes possible bigger loads with thinner "bite," less "hogging." This keeps borrow area smooth for fast scraper movement; improves drainage, eliminates "pockets."

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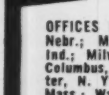

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(Continued from page 100)

PUERTO RICO

BUILDINGS—LB & CA

▲† **Terminal Corp.**, P. O. Box 175, Wood-Ridge, N. J., CA $11,098,000, Capehart HOUSING, Naval Station Roosevelt Roads, PUERTO RICO. P. Wks. Office, Navy Dpt., Naval Station, Puerto Rico.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **Murray-Sanders Co.**, 21166 S. Main St., Santa Ana, Calif., CA $3,634,700, 248 units Capehart HOUSING (incl. ranges, refrigerators, etc., sewage roads, etc.) NBy 14616, MC Camp Smith, Waikele, West Loch, MANANA, T. H. Dist. P. Wks. Office, 14th N.D., Pearl Harbor, T. H. Hugh Gibbs, 441 E. 1st, Long Beach, Calif., archt. CD 3/13, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **N. J., Jersey City**—City Water Dpt., City Hall, cement lining 285 mi. pipe (to be done in stages, 1st stage to be 10 mi. of 16 in. and 36 in. main, feeders scheduled for this summer). $3,000,000. Harold M. Ohland, City Hall, engr.

SEWERS, WASTE DISPOSAL

▲ **Pa., Clearfield**—Clearfield Sewer Auth., Borough Hall, sewage treatment plant. $1,300,000. CD 6/21/47.

BRIDGES

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, **Pottawatomie Co.**—16 bridges and grade separations on US Interstate No. 40 east from the Oklahoma City line, $1,778,352.

▲ **UTAH**—State Rd. Comn., 442 State Capitol, Salt Lake City,

Box Elder Co.—3 diamond interchanges 10.1 mi. Blue Creek Summit-Rattlesnake Pass, $500,000, FAI.

Duchesne Co.—widen Dry Gulch Bridge, surf. curb to curb 6 blocks in Roosevelt road mix surf.; 4 lanes 0.8 mi. Dry Gulch to Roosevelt, $120,000.

Emery Co.—40 ft. bridge, approaches road mix surf. 2 lane 0.1 mi. Wilberg Wash Bridge near Castledale, $40,000.

Kane Co.—195 ft. span concrete bridge 4 mi. Kanab-Mo. Carmel Jct., $700,000.

Salt Lake Co.—surplus canal bridge 107 ft. span rein.-con. 4 lanes 0.02 mi. Surplus Canal, Redwood Rd., $120,000.

Washington Co.—3 interchanges, 1 concrete bridge 5.6 mi. Andersons Ranch-North Pintura (2nd Contract) $778,000.

▲ **Wash., Tacoma**—City, City Hall, bridge on Yakima Ave. across Wakefield Dr. $1,235,000. H. Whitacre & Assocs., 2907 A St., consult. engrs. CD 3/18.

STREETS AND ROADS

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Los Angeles Co.—constr. ½ mi. new 4 lane hy. out into the ocean around big Pacific Palisades slide on U.S. 101 Alternate Proj. involves bldg. jetties, constr. embankment along beach and placing of riprap along slope of embankment to protect roadway from wave and storm erosion. $1,000,000. CD 10/25/56.

▲ **UTAH**—State Rd. Comn., 442 State Capitol, Salt Lake City,

Box Elder Co.—road mix surf. 2 lane, 22 ft. roadway 11.4 mi. Blue Creek to Idaho line; Pocatello Valley Rd. $113,000.

Cache Co.—road mix surf. 2 lane 24 ft. roadway 7.2 mi. Hyrum-Blacksmith Fork Canyon 3 Portland c. conc. Bridges, 31, 30 & 28 ft. spans. $300,000.

plant mix surf. 4 lanes divided curb and gutter 1.8 mi. Logan 15th East to Main St. SU 89. $320,000.

Carbon Co.—road mix surf. 2 lane 24 ft. roadway portland cement con. bridge 62 ft. span, 6.2 mi. Scofield-Clear Creek, $250,000.

Daggett Co.—road mix surf. 2 lanes 28 ft. roadway Greendale-Flaming Gorge, $250,000.

Salt Lake Co.—2 and 4 lane plant mix surf.; curbs and gutters Salt Lake 8.0 mi. Redwood Rd. from Bingham Jct. to Bluffdale, $400,000.

San Juan Co.—road mix surf. 2 lane, 24 ft. roadway 8.1 mi. east of La Sal to Colorado line U. 46, $450,000.

road mix surf. 2 lane 24 ft. roadway 2.9 mi. 1½ mi. west of Colorado line to Old La Sal U. 46, $267,000.

road mix surf. 2 lanes, 24 ft. roadway 10.2 mi. Montezuma Jct. to Aneth Oil Fields (2nd Contract) $200,000.

Sanpete Co.—plant mix surf. 2 lanes, 32 ft. width pave curb to curb in Manti 7.0 mi. Manti-Ephraim, U.S. 89, $360,000.

Summit Co.—road mix surf. 2 lane, 24 ft. roadway 1-25 ft. concrete bridge 5 mi. Upton to Pine View, $220,000.

Tooele Co.—plant mix surf. 4 lanes 40 ft. med. 3.5 mi. 1 diamond int., 1 RR overpass, Low overpass U.S. 40, $1,600,000 FAI.

Uintah Co.—road mix. surf. 2 lanes 24 ft. roadway 7.0 mi. Radletee Jct.; U.S. 40, $285,000.

road mix. surf. 2 lanes 24 ft. roadway 1.5 mi. Jensen-dinosaur Monument, $60,000.

Utah Co.—road mix surf. 24 ft. roadway 1.4 mi. Fairview to Forest Boundary, $60,000.

plant mix surf. 2 lane, 24 ft. roadway, 1 concrete bridge 1.4 mi. Alpine Jct.-Alpine, $50,000.

road mix surf. 2 lane, 28 ft. roadway 2 mi. U. 200 East of Amn. Fork SR-146, $60,000.

Washington Co.—plant mix. surf. 4 lanes, 36 ft. med earthwork and structures to station 203 plus, 5.9 mi. Ash Creek to Iron Co. line, $1,100,000, FAI.

Weber Co.—plant mix surf. 4 lanes curb, and gutter 3.0 mi. Wall Ave. from Rustin St. to Riverdale Rd., Ogden, $300,000.

plant mix surf. 4 lanes, curb and gutter 1.2 mi. on 36th St. from Harrison to Riverdale Rd., Ogden, $120,000.

EARTHWORK, WATERWAYS

▲ **Pennsylvania**—Pa. Dpt. Forests & Waters, Education Bldgs., Harrisburg, flood control proj. for Brodhead and McMichaels Creeks, Stroudsburg and E. Stroudsburg Boros, Monroe Co. $2,485,000. B. D. Murphy, c/o owner, ch. engr.

AIRPORTS

▲† **Neb., Omaha**—ICBM MISSILE SITE—Dpt. Defense Pentagon, Wash., D. C., ICBM missile site at Offut Air Force Base, $25,000,000 To go ahead summer 1958.

▲ **Wash., Spokane**—MISSILE BASE—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, intercontinental ballistic missile base, $25,000,000. Work to begin this summer.

PUBLIC BUILDINGS

▲ **Calif., Santa Fe Springs** — SCHOOLS — Little Lake School Dist., 10515 S. Pioneer St., voted $1,015,000 bonds Feb. 25, schools.

▲ **Fla., Tallahassee**—DORMITORY—State Bd. Control, Education Bldg., Florida State University, Tallahassee, plans by Guy C. Fulton, Bldg. E. University of Fla., Gainesville, 10 story, ground-floor, 132 x 213 ft. CB brick and RIC, etc. mens' dormitory, air-conditioned Florida State University, $2,000,000. Ebaugh & Goethe, 205 NW 10th Ave., Gainesville, consult. engrs. CD 6/19/56.

▲† **Ill., Lemont**—ACCELERATOR—Atomic Energy Comn., Lemont, particle accelerator, house in 200 ft. diam. earth tunnel, 10 laboratory and auxiliary bldgs., utilities, etc. project is a 12.5 billion, electron volt zero Gradient proton synchrotron, at Argonne National laboratory. $27,000,000. Sverdrup & Parcel, Inc., 915 Olive, St. Louis, Mo., archt.-engr. CD 12/17.

▲ **Kan., Lawrence**—SCHOOL—Bd. Educ. voted $1,205,000 bonds Apr. 15, Junior High School and expansion of grade schools. CD 4/9.

▲ **La., Lafayette**—AUDITORIUM—City, Mayor Jerome E. Domengeaux, City Hall, plans by A. Hays Town, Triad, Bldg., auditorium on site at Heymann Blvd., South College Rd. and Girard Park Drive. $1,500,000. Bids in June.

▲ **Me., Orono**—AUDITORIUM—University of Maine, Office President, Orono, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, auditorium on campus. $1,200,000. Constr. 1958 or early 1959.

▲ **Md., Rockville**—SCHOOLS—Montgomery Co. Bd. Educ., Rockville, plans by Arthur Anderson, 1726 M St. N.W., Wash., D. C., Jackson Road Elementary School, Springbrook Area, Silver Spring, $358,000; Forest Knolls Elementary School, Wheaton, $408,400; plans by Rhees Burket, 1224 Connecticut Ave. N.W., Wash., D. C., Aspen Hill school, Wheaton, $2,445,000; plans by William N. Denton, 1300 Connecticut Ave. N.W., Wash., D. C., Holiday Park Elementary School, Rockville, $390,600; plans by Justement Elam & Darby, 2011 K St. N.W., Wash., D. C., Walter Johnson High School addn. Rockville, $444,000; plans by John F. Stann, 200 Monroe St., Rockville, Md., Montgomery Jr. College addn., Takoma Park, $470,000; plans by Roger Loung, 9300 Old Georgetown Rd., Bethesda, Md., Takoma Park Jr. high addn. $358,215; plans by May & Ruppert, 1308 18th St. N.W., Wash., D. C., Wilson Lane elementary school, Bethesda, $369,500.

▲ **Mass., Ashburnham and Westminster** — SCHOOL—Towns, Ashburnham & Westminster, Supt. Schools, Ralph Curran & Frank Lawler, plans by James A. Britton, 315 Federal St., Greenfield, Regional Junior-Senior High School, vicinity of here $1,750,000. CD 2/21/56.

▲ **Mich., Madison Heights**—SCHOOL—City, F. Foster Williams, supt. Schools, bond election May 19, high school on 11-Mile Rd. between Lorenz and Couzens. $1,000,000. George D. Mason & Co., 409 Griswold, Detroit, archts. (Correction—bond election date). CD 1/21.

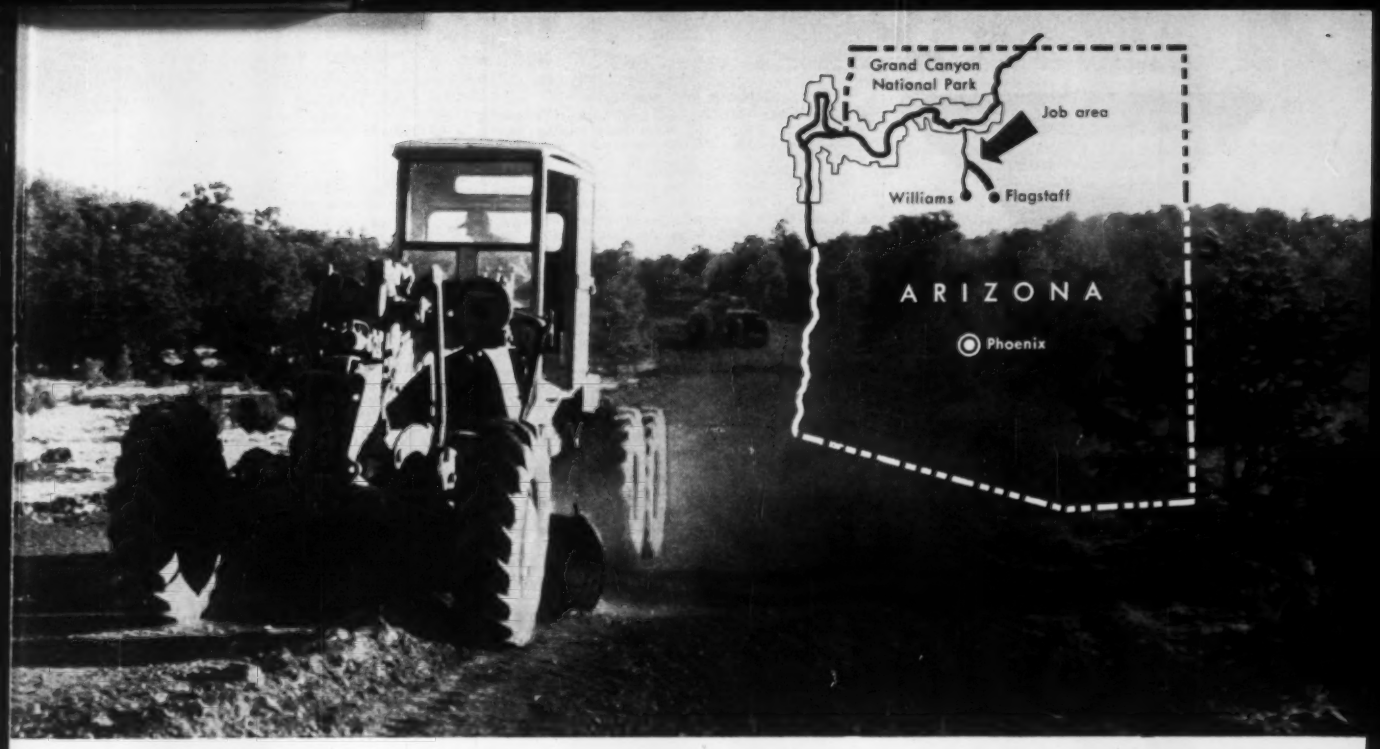
▲ **Minn., Waseca**—SCHOOLS—Bd. Educ., E. C. King., clk., voted $1,350,000 bonds Apr. 11, two elementary schools and high school addn. E. D. Corwin & Assocs., 818 First National Bank Bldg., St. Paul, archts. CD 7/8.

▲ **Mo., Kansas City**—SCHOOL—Bd. Educ., c/o Dr. Dewey Smith, supt. Bldgs. & Grounds, 800 E. 21 St., Kansas City, Mo., 1,000 students for Southeast Junior High School, Meyer Blvd. and Swope Parkway. $1,000,000. CD 5/4/56.

▲ **Neb., Hallam**—SODIUM GRAPHITE REACTOR—Consumers Pub. Power Dist. of Nebraska, 1452 25th Ave., Columbia, 75,000 kw. sodium graphite reactor feeding steam to conventional turbogenerator, at Nuclear Power Plant. $29,000,000. Bechtel Corp., 220 Bush St., San Francisco, Calif., consult. engrs. CD 9/27.

▲ **N. J., Trenton**—SCHOOL—City, City Hall, reconstr. Cadwalader Elementary School, $1,000,000; reconstr. McClellan Elementary School, $1,000,000; reconstr. Columbus Elementary School, $1,000,000.

(Continued on page 104)



Cushions shock of 2′ "clinkers"

on tourist shortcut to Grand Canyon

Providing a new route for tourist travel to Grand Canyon, Arizona Highway Department awarded a 10-mile roadbuilding contract to Copper State Construction Co., Mesa, Arizona. Contractor's section is 35 miles NW of Flagstaff . . . part of a new highway from Flagstaff and U.S. 66 to an intersection with Route 64.

Copper State handled 250,000 cu. yds. of dirt — mostly tough, red volcanic cinder — with 5 scrapers, 2 pushers, and a crawler with sheepsfoot roller. One grader — a 190 hp Adams* POWER-*Flow** 660 — handled all blading.

Haul 3500 yds. daily down 12% slope

Of the total yardage moved, 160,000 yds. were hauled from side borrows. At one point, dirtmovers brought 3500 yds. daily from a hillside borrow to a long, shallow fill. Tandem crawlers push-loaded the big scrapers. Units then hauled the tough, abrasive material 2000′ on roads kept smooth by the grader . . . spread at varying distances on the fill. Water wagons kept cinder-dirt wet for best compaction.

Blades big chunks, to 3.5 mph

Torque-converter-equipped "660" spread and shaped the chunky cinder material . . . often in large "clinkers" of 1½′ to 2′ diameter. Operator Herb Gappa worked the Adams in 1st gear-range (0.0 to 3.5 mph) to roll-out the abrasive material for speedy compaction and fast, on-the-run dumping by scrapers. POWER-*Flow* transmission delivered continuous high-rpm push-power at all speeds.

In bucking this rough going, the fluid coupling in POWER-*Flow* 660 cushioned the shock of load impacts . . . protected engine, transmission, and blade mechanism. Gappa never had to shift gears manually, because machine's torque converter affords the effective work-power of infinite gear ratios, at all speeds within the selected gear-range.

"Moves more dirt and faster, too"

"We like the '660' . . . it's the best grader on the market", says contractor-owner Link Colvin. "The torque converter on '660' works out swell. It moves more dirt and faster, too. On oil mix, it'll turn a 4′ windrow . . . do more work than 2 ordinary 115 hp graders."

Reports Operator Gappa: "It's easy to roll a bigger load with this torque-converter Adams. Controls are quick and positive . . . visibility is good. And with this toe-heel reverse pedal it's so easy to back off a big rock for another bite. I can turn around real fast, because there's no hand shifting." Says Supt. H. P. Snowden, "For rough work, there's nothing like this '660' . . . it'll outwork any grader on the market."

See for yourself how the Adams POWER-*Flow* 660 can give you extra production and make bigger profits on your future work. Ask for a demonstration.

*Trademark G-1526-DCJ-1

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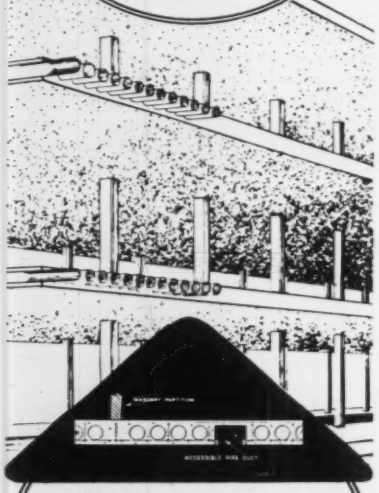
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

stronger, lighter
more economical

concrete floors
and roof decks
with new revolutionary

*TUBE SLAB
CONSTRUCTION
SYSTEM



- Reduces construction costs
- Reduces floor thickness
- Lightweight
- Provides recessed ducts for mechanical installations
- Vibration-resistant—fireproof and soundproof
- Unlimited flexibility of design

*Trademark

Proven in actual use in over $50,000,000 of construction—typical installations are—I.B.M. Building, Hartford, Conn., Manchester, Conn. High School, Highway bridges in many states.

Tube Slab construction is in a patent pending status. The Tube Slab Company is exclusive licensee. Users without license are potentially liable for life of structure.

Authorized tube manufacturers can furnish license with invoice. For your protection insist on license signed by A. J. Macchi, the inventor (re E.N.R. May 29, 1952). Write for details.

PAT. PEND. U.S.A. AND CANADA

THE TUBE SLAB CO.

57 FARMINGTON AVE., HARTFORD, CONN.

(Continued from page 102)

▲ **N. Y., Ithaca**—SCHOOL—Bd. Educ. plans by Perkins & Will, 55 Church St., White Plains, Senior High School for 1,600 students comprising nine units connected by corridors at Cayuga St. and Rosemary Lane. $3,000,000. Garfinkel & Marenberg, 100 W. 42 St., New York, Zone 36, structural engrs., Marvin H. Segner & Assocs., White Plains, mechanical engrs.

▲ **N. Y., Plainview**—SCHOOLS—Bd. Educ., Plainview, defeated $4,975,000 bonds Apr. 19, 3 elementary schools. CD 4/10.

▲ **Okla., Tulsa**—SCHOOLS—Bd. Educ., 410 S. Cincinnati St., Tulsa, $4,000,000. bond election May 20, schools.

▲ **Ore., Gresham**—SCHOOL—Gresham Union High School Dist., voted bonds Apr. 15, high school. $1,308,500. Burns, Bear, McNeill & Schneider, 2940, S. E. Belmont Ave., Portland, archts. CD 4/1.

▲ **Pa., Bethlehem**—SCHOOL—Bethlehem School Dist., Bethlehem, high school addns., alterations. $1,238,000.

▲ **Pa., Mt. Penn (P. O. Reading)**—SCHOOL—Mt. Penn-Lower Alsace Joint School Dist., Friedenburg Rd., Reading P. O., Mt. Penn., high school addn. $1,270,702.

▲ **Pa., Pottstown**—SCHOOL—Potttstown Pa. School Dist. plans by Sanders & Thomas Assocs. Security Trust Bldg., Senior High School. $3,000,000. Bids about Sept. 1. CD 10/4.

▲ **S. C., Clemson**—ENGINEERING—Clemson College, Clemson, S. B. Earle, chemical engineering bldg. $1,750,000.

▲ **Utah, Salt Lake City**—SCHOOL—Granite School Dist., Elmer J. Hartvigsen, supt., 3213 State St., voted bonds Apr. 1, schools. $4,200,000.

▲ **Wash., Ellensburg**—HOUSING—Central Washington College of Education, student housing. $1,260,000.

▲ **Wis., Milwaukee**—PARKING—City, City Hall, 600-car parking pavilion at Milwaukee River and W. Clybourn St., $1,600,000, Chas. W. Yoder, 3505 W. Center St., consult. engr.; 450-car parking pavilion at N. 2 St., $1,250,000, Chas. Nagel & Assocs., 1615 Underwood Ave., Wauwatosa, Zone 13, consult. engrs.; plans by Lefebvre, Higgins & Assocs., 3868 N. Teutonia Ave., 450-car parking pavilion, N. Broadway and E. Wells St., $940,000, E. A. Schmidt, city engr. CD 12/6.

▲ **Alaska, Eielson Air Force Base**—HOUSING—U. S. Eng., Anchorage, 55 units of family housing. $1,000,000.

▲ **N. B., Saint John**—PROVINCIAL—Provincial Dpt. P. Wks., Parliament Bldgs., Fredericton, 4 story, bsmnt. provincial bldg., Charlotte St. $1,000,000.

▲ **Ont., Timmins** — FEDERAL — Dpt. P. Wks., Hunter Bldg., Ottawa, plans by Gibson & Pokorny, 1104 Bay St., Toronto, 2 story, bsmnt., rein.-con. with stone, precast granite facing, federal bldg. $1,000,000. Bids may be called late this year.

▲ **Que., Amqui**—HOSPITAL—Provincial Health Dpt., Parliament Bldgs., Quebec City, hospital. $1,000,000.

▲ **Que., Gaspe**—HOSPITAL—Provincial Dpt. Health, Parliament Bldgs., Quebec City, hospital, $1,000,000.

▲ **Que., Thetford Mines** — HOSPITAL — Provincial Dpt. Health, Parliament Bldgs., Quebec City, hospital. $1,000,000.

COMMERCIAL BUILDINGS

▲ **Ill., Glenn Ellyn**—HOSPITAL—Glen Ellyn-Wheaton Hospital, c/o Perkins Norris & Mulloy, archts., 443 Duane St., 3 story, bsmnt, hospital. $1,000,000. Site not selected.

▲ **Ill., Joliet**—SHOPPING CENTER—J. C. Shepherd, Shepherd Constr. Co., 1015 Plainfield Rd., shopping center, incl. Goldblatt Store, Larkin and Theodore Sts., Hilcrest, near here. $4,000,000.

▲ **La., New Orleans**—MEDICAL, etc.—Tulane University, 6823 St. Charles Ave., Joseph M. Jones, pres. Bd., New Orleans, renovation of Hutchinson Memorial Medical Bldg., $2,000,000; law school and law library near Howard-Tilton Memorial Library, $1,500,000.

▲ **Mass., Andover**—SHOPPING CENTER—Harry Axlerod, Alden Rd., shopping center and motel: L shaped bldg. incl. 20 stores, off Railroad Ave. $1,000,000. Constr. 1958.

▲ **Minn., Maplewood (P. O. St. Paul)**—SCHOOL—Archdiocese of St. Paul, Chancery Office, 244 Dayton, plans by B. J. Knowles & Co., 504 Commerce Bldg., Minneapolis, Christian Brothers High School and Residence, incl. 1 story, part bsmnt. 90,000 sq. ft. school; 12,000 sq. ft. residence at White Bear and Larpenteur Aves. $1,350,000.

▲ **Mo., Kansas City**—APARTMENT—Dr. Jos. Dinnestra, c/o Al. Martina, archt., 7613 Reading Rd., Cincinnati, 10 story (80 units) brick, concrete, glass front apartment. $2,000,000.

▲ **Mo., St. Louis County**—COUNTRY CLUB—Meadowbrook Country Club, Ben Plum, pres., Midland Blvd. and Sims Ave., Overland, Zone 14, country club project on 300-acre tract north side Clayton Rd. east of Kehr's Mill Rd., incl. club house, swimming pool, 18-hole golf course, etc. Over $500,000.

▲ **N. J., Newark**—OFFICE—Mutual Benefit Life Ins. Co., 520 Broad St., plans by Frank Grad, 11 Commerce St., and Eggers & Higgins, 100 E. 42 St., New York, N. Y., 15 story office bldg., Washington and Broad Sts. $5,000,000, CD 11/19.

▲ **N. J., Scotch Plains**—SCHOOL—Archdiocese of Newark, 33 Mulberry St., Newark, and St. Bartholomew's, 2032 Westfield Ave., plans by Edward McCarthy, 610 Arlington Ave., Plainfield, 3,000-student regional high school. $5,000,000, Target for completion Sept 1959.

▲ **O., Bedford**—APARTMENTS—Rabinsky Building Co., 2800 Mayfield Rd., Cleveland, Zone 18, plans by Louis Skolnik, Perry-Payne Bldg., Cleveland, Zone 14, 3 apartments, 1-36 suite and 2-24 suite, Warrensville Center and Ellenwood Rds., Over $1,000,000. (36-suite unit will be built first and others later).

▲ **O., Brook Park**—HOUSING—Starlite Properties, 12728 Woodland Ave., Cleveland, Zone 20, plans by Hart & Weiss, 12728 Woodland Ave., Cleveland, Zone 20, 400 homes, six 8-suite apartments, on 62 acre site. W. 130 and Huffman Dr. $8,000,000. Would be built over a period of several years.

▲ **O., Lakewood**—OFFICE—Warren-St. Charles Co., 14700 Detroit Ave., Cleveland, Zone 7, plans by T. A. Badowski, 7109 Harvard Ave., Cleveland, Zone 5, 10 story, 120,000 sq. ft. office bldg. $3,000,000-$4,000,000.

▲ **O., Pepper Pike**—APARTMENT—Owner, c/o George Burrows, archt., 16104 Kinsman Rd., Cleveland, Zone 20, 180-unit apartment project on 25 acre site at NW corner of Shaker Blvd. and Brainard Rd. $3,000,000.

▲ **O., Richmond Heights**—APARTMENTS—Lake 20, Inc., 26101 Euclid Ave., Cleveland, Zone 32, 864 one-two bedroom suite, 54 brick, stone apartments. $8,000,000. Rezoning of property to be approved before plans advance.

▲ **O., Toledo**—SCHOOL—Sisters of St. Ursula Convent, 2413 Collingwood Ave., plans by Britsch, Macelwane & Assocs., 2446 Sylvania, St. Ursula Academy (school), Indian Rd. $1,000,000. Bids about May 15. CD 4/30/53.

▲ **Pa., Phila.**—SCIENCE—La Salle College, 20th St., Olney Ave., plans by Nolen & Swinburne, 1601 Locust St., science bldg. $1,500,000. Bids in June. CD 9/19.

▲ **Pa., Radnor**—HOTEL, etc.—Matthew B. Weinstein, c/o Chetwynd Apts., Rosemont, plans by C. Frederick Wise, Chetwynd Apts., Rosemont, hotel and drive-in bank. $2,000,000.

▲ **Pa., Wyncote**—APARTMENT HOUSE—Owner, c/o Aaron Colish, 117 S. 17th St., Phila. apartment house, Washington Lane, $3,000,000.

▲ **Tenn., Nashville**—OFFICE—W. H. Criswell & W. H. Weaver, Commerce Union Bank Bldg., plans by Granbery Jackson Jr., Stahlman Bldg., 4 story 502 ft. x 102 ft. office, $3,000,000.

▲ **Tex., Dallas**—HOSPITAL, etc.—Vernon & Jas. Smith; 2151 Fort Worth Ave., hospital and medical center on 40 acre tract, Hy. 67, Ledbetter Dr., Polk and 5 mi. creek boundary in Oak Cliff. $6,000,000.

▲ **Tex., Midland**—OFFICE—Midland Savings & Loan Assn., 300 W. Wall St., plans by Sorey, Hill & Sorey, archts.-consult. engrs., 809 N.W. 36th St., Oklahoma City, Okla. 13 story, part bsmnt. office. $2,000,000.

▲ **Ont., London**—DWELLINGS—Sifton Constr. Co., Riverside Dr., 150 brick veneer dwellings, Orchard Park sub-division. $2,500,000.

▲ **Que., Delson**—HOUSING—Blair Constr. Ltd., 1190 Lavelle Blvd., St. Martin, plans by Romeo J. Desjardins, 3605 Hochelaga St., Montreal, 200 one story, bsmnt. medium priced bungalows, homes, $2,000,000.

▲ **Que., Fabreville**—HOUSING—Blair Constr. Ltd., 1190 Labelle Blvd., St. Marin, plans by Romeo J. Desjardins, 3605 Hockelaga St., Montreal, 200 one story, bsmnt. homes, concrete fdn. $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Colo., Englewood**—PLANT—Garden Farm, Inc., Sealtest National Dairy Products Corp., East 60th Ave. and Albion, Denver, plans by Arthur Silver, 21 E. 40th Ave., New York 16, N. Y., dairy processing plant between Nassau Ave. and West Oxford Ave. $1,000,000. Joe Lort, Jr., 211 Clayton St., Denver, assoc. archt. Krey & Hunt, 292 Madison Ave., New York 17, N. Y., consult. engrs. CD 4/10.

▲ **O., Cincinnati**—WAREHOUSE—The John Shillito Co., 7th Race and Shillito Place, 500,000 sq. ft. warehouse on 8½ acre site Winton Rd. $5,000,000. Site purchased.

▲ **Tenn., Alcoa**—DOCK FACILITY—Aluminum Co. of America, 1200 Alcoa Bldg., Pittsburgh 19, Pa. one dock facility $3,000,000. Frank Cox, c/o owner, Alcoa, Tenn., owners staff engr. CD 12/27/51.

▲ **Tex., Wink**—PLANT—West Texas Gathering Co., Colorado City, gas processing plant. $3,750,000. FPC approved.

▲ **Utah, Salt Lake City**—RESEARCH LABORATORY—The Texas Co., Dr. W. E. Kuhn, mgr. of Research, Glenham, Beacon, N. Y., research laboratory for shale oil research on 25 acre site near Beck's St. overpass. Over $2,000,000.

UNCLASSIFIED

▲ **Louisiana-Mississippi-Alabama** — GAS LINE — United Gas Pipeline Co., Box 1407, Shreveport, Zone 92, 203 mi. 30 in. gas line between New Orleans, La. and Mobile, Ala. incl. 78 mi. from near New Orleans to Hancock Co., Mississippi. $8,120,000.

▲ **N. M., Albuquerque**—RACE TRACK—Furtuna Corp., c/o W. E. Burk, Jr., archt., 512 Yale Blvd. S.E., race track at Gateway Park. $1,500,000.

▲ **Texas**—COMPRESSOR STATION—Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La. 6,600 h.p. compressor station near Blessing, Matagorda Co. $2,388,400. (Correction—estimated cost). CD 4/15.

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PROFIT MARGIN

Yes ... prove to me that B Tournapull will move more dirt at lowest-net-cost-per-yard. Phone me on or about ..... (date) at ..... (number) to arrange for a demonstration on one of our jobs.

Name ..... Position .....

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Address .....

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(Fill out and mail to your LeTourneau-Westinghouse Distributor)

We will prove to you that

B Tournapull® moves more dirt ... faster ... at less cost

than any other scraper

In actual weight-and-time tests — and through the experience of users — we know that 27-yd B 'Pull† will move more dirt at lowest-net-cost-per-yard.

We are confident that "B" will do the same for you.

If you are handling *big* yardages, or expect to do so in the near future, you should see for yourself how this fast-working scraper can increase production and UP your profits. Take advantage of this opportunity to see B 'Pull in action, on your job. Mail the above "request for demonstration" to your LeTourneau-Westinghouse Distributor.

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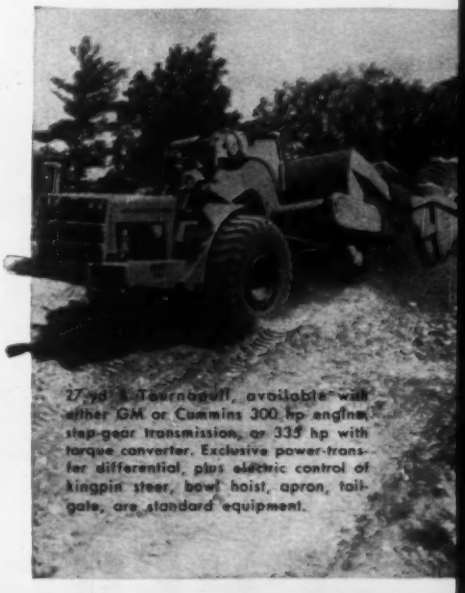

27-yd B Tournapull, available with either GM or Cummins 300 hp engine, step-gear transmission, or 335 hp with torque converter. Exclusive power-transfer differential, plus electric control of kingpin steer, bowl hoist, apron, tailgate, are standard equipment.

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Now you can handle BIG jobs with a low-cost Series 50 H or 60 H Chevrolet!

Here's an opportunity to save hundreds of dollars on the next big truck you buy! Extra equipment is now available to broaden the application of economical Series 50 and 60 models. They're ready to do big jobs with G.V.W.'s up to 21,000 lbs. ...and you pocket the big price difference!

CHEVROLET

Chevrolet's new Series 50 and 60 "H" models are equipped to work like trucks that cost much more . . . to do many jobs that used to call for bigger and more expensive trucks. *They're priced hundreds of dollars lower than other heavyweight haulers,* yet they're ready to take on tasks requiring up to 21,000 lbs. G.V.W.—thanks to these husky heavyweight components:

- 16,000-lb.-capacity single- or two-speed Eaton rear axles.*
- Big-truck brakes—9½-inch Hydrovac power brakes* or Air-Hydraulic brakes.*
- 4-speed Synchro-Mesh transmission with hard-pulling 7.06 to 1 low gear ratio or New Process 5-speed* or 6-speed Powermatic transmissions.*
- Tough long-leaf front springs that go up to

CHEVROLET TASK·FORCE

2,900 lbs. capacity* at each wheel; rear springs with up to 9,100 lbs. capacity.*

- Heavyweight V8's—modern power from 160-h.p. Heavy-Duty Taskmaster V8 or 175-h.p. Heavy-Duty Super Taskmaster V8.*

Tough heavy-duty components such as these broaden the application of Chevrolet's Series 50 and 60 trucks. The new "H" models are ideal for *many* mammoth hauling jobs, such as car haulaways, or for pulling grain semi-trailers, or contractors' dump bodies, and many more. They're true big-tonnage haulers in everything but price, and, chances are, there's one to suit *your* job. See your Chevrolet dealer soon; see how *you* can save hundreds of dollars on the next big truck you buy! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Extra-cost heavy-duty options.*

TRUCKS

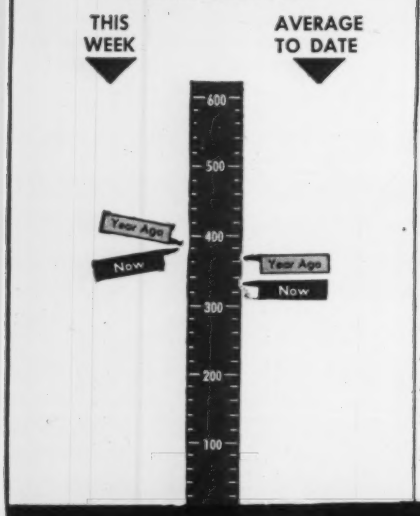
An all-new high-style pickup by Chevrolet!

It's the smooth-lined new *Fleetside*—as handsome a pickup as ever graced a hauler's business! With the latest in styling, it's a standout on any street, and you get extra utility, too. The *big* body—a full 6 feet wide and up to 98 inches long—enables you to haul many additional cubic feet of payload.

Construction Scoreboard

ACTIVITY THIS WEEK

Contract Awards
Millions of Dollars

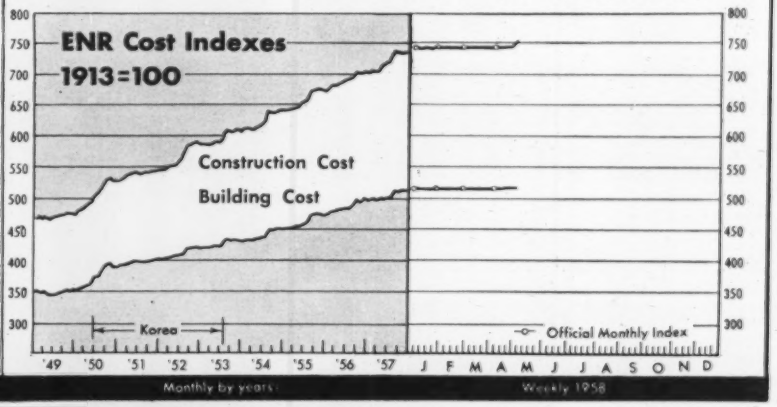


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of May 1 1958	% Change from Apr. 3 1958	% Change from May 2 1957
Construction Cost	751.57*	+0.78	+5.0
Building Cost	518.48*	+0.36	+3.1

* Official monthly index for May 1958.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 19 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$380.6	$6,280.8	−9
Private	147.3	2,741.3	−10
Public	233.3	3,339.5	−8
State & Municipal	181.6	2,607.6	+3
Federal	51.7	736.9	−33
By Type of Work			
Public			
Waterworks	5.5	105.9	−11
Sewerage	13.7	199.9	+29
Bridges*	16.4	178.5	−32
Highways	91.5	1,041.7	−1
Earthwork, Waterways	20.7	273.5	−43
Buildings, Excl. Housing	53.5	861.2	+7
Housing	1.5	366.2	+38
Unclassified	30.6	320.7	−34
Private			
Mass Housing	69.6	1,313.4	+19
Commercial	53.6	697.1	+5
Industrial	19.7	760.0	−41
Unclassified	4.3	162.7	−18

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of May 1	Cum. 18 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$196.2	$2,160.4	−3
State and Municipal:			
All Except Housing	145.4	2,490.1	+24
Housing	...	20.3	−51
Federal Loans	1.0	71.1	−12
Federal Aid	...	....	...
Total Nonfederal	$342.5	$4,741.9	+8
Federal Appropriations:			
Projects in U. S.	...	$602.2	...
Outside U. S.	...	....	...
Total New Capital	$342.5	$5,345.1	+22

WAGE RATES, 20-cities average

	May 1958	% Change from Apr. 1958	% Change from May 1957
Common	$2.411	+0.9	+6.9
Skilled (average 3 trades)	3.643	+0.2	+4.4
Bricklayers	3.885	0	+3.6
Structural Ironworkers	3.660	+0.3	+5.3
Carpenters	3.388	+0.4	+4.7
Equipment operators (average three types)	3.336	+1.0	+7.0

MATERIAL PRICES, 20-Cities average

Structural Steel (average 3 mills), per cwt.	5.275	0	+5.5
Lumber, 2x4 Fir, per M fbm	112.67	+1.2	−2.5
Lumber, 2x4 Pine, per M fbm	100.08	+1.1	−1.8
Cement, bulk, per bbl	3.971	+0.1	+1.2
Sand, per ton	2.497	0	+1.9
Ready-mixed concrete, per cu yd	13.848	0	+2.1
Gypsum sheathing, ½"x2'x8', per Msf*	62.792	+0.1	−0.3
Fiber board sheathing, ½" sq. ed., per Msf*	71.395	+0.1	−0.5
Mineral wool insulation, 3' batts, per Msf*	70.766	−0.3	−1.3
Crushed stone, 1½", per ton, CL	2.838	0	+0.7
Concrete blocks, sand/gravel, 8"x8"x16", each*	.228	−0.4	+0.9

	Apr. 1958	Mar. 1958	Apr. 1957
Brick, common per M	37.880	−0.3	+1.2
Lime, hydrated finishing, per ton, CL	38.596	+0.3	+6.7
Structural clay tile, 3x12x12", per M, 2,000 up*	185.308	+0.5	+3.7
Vitrified clay sewer pipe, std 12", per ft	1.260	0	−4.8
Concrete sewer pipe, 12", per ft	1.290	+3.9	+12.1

*Delivered, trucklots

ENR INDEX REVIEW

1957	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
May	715.70	150.04	503.01	142.99	553	160
Jun	721.36	151.22	504.17	143.32	588	170
Jul	724.15	151.81	506.62	144.01	587	170
Aug	738.63	154.84	516.90	146.93	528	153
Sep	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	723.85	151.74	508.67	144.59	517	150
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	520	150
Apr	745.78	156.34	516.61	146.85	238	169
May	751.57	157.56	518.48	147.38	...	...

"Buy American" Battle Gets Hotter

Competition for hydroelectric machinery sales in U. S. soars to climax at Oahe bid opening

International competition among makers of big hydroelectric machinery went a crucial round last month in the Missouri Valley. A U. S. contender scraped through with a contract, but not before being beaten out of a handsome profit.

This particular competition was over manufacture and installation of seven 89,474 kv generators at Oahe Dam, a hotly contested prize coveted by four domestic and two foreign firms. It was roughly a $10 million contract, on which bids first had been opened and rejected in January.

The return match last month saw the ultimate low bidder, General Electric Co., come in with a price whittled down more than $2.5 million from its January bid. GE took the contract, but foreign competition was keen just as it had been at Gavins Point, Garrison and Fort Peck before.

Foreign manufacturers of hydroelectric machinery have been consistent contenders for a share of the U. S. market. Their biggest handicap historically has been the Buy American Act, passed in 1934. As originally interpreted, it provided that contracts in excess of $25,000 could be awarded to a foreign firm only if its price—because of labor differential—were at least 25% under the low U. S. bid.

With Europe in the throes of rebuilding after the war—and the 25% differential—foreign competition scarcely existed. At Fort Randall Dam, first of the Pick-Sloan dams across the Missouri River, work began right after the war and there were no foreign bids.

• Enter foreign competition—With the rehabilitation of the European economy, competition became brisk in the early 1950s. Foreign heavy electrical equipment manufacturers received a whole series of Reclamation and Corps of Engineer contracts. Each negotiation touched off a lengthy and acrimonious Buy American debate, and not least of the controversy centered around vague and conflicting Buy American standards applied by the U. S. agencies.

So in 1954, President Eisenhower issued an executive order that changed the Buy American differential to 6% under most circumstances. This was aimed at standardizing Buy American practices, but also it was hailed as a stout blow by the President in behalf of free trade and foreign competition.

In subsequent years competition has been an important factor at every Missouri River dam—Gavins Point, Garrison, Oahe and Fort Peck. (Fort Peck is already in existence, but a second powerhouse is being added.) A German firm took a gantry crane at Gavins Point, while Brown-Boveri, a Swiss company, has some circuit breakers there. There are British Ferranti transformers at Garrison. An Italian firm got the transformers at Gavins Point.

American firms have not met the invasion lying down. Pencils were sharpened in earnest as the Oahe invitations to bid came. Those close to the situation say that Brown-Boveri wanted this generator business badly. The firm, try as it might, has not yet taken a large generator contract in the U. S.; it was determined Oahe should be its first.

• U. S. firm the winner—GE, they say, was equally determined to keep Brown-Boveri out. This attitude apparently solidified after the first bids on Oahe generators were opened and rejected. By the time the readvertised bids were submitted, GE had resolved to keep out the Swiss at almost any price—at $2.5 million less on its own price. On an evaluated basis, it bested Brown-Boveri – dollar-to-dollar – without recourse to the 6% cushion provided by the Buy American Act.

When bids were opened in January, Brown-Boveri was low with a bid of $9,502,895. English Electric Export & Trading of London was second. GE was in fourth place with $12,174,755. Six bids were received in all.

The bids were rejected as not responsive and indicated a need for redrafting of specifications because Army Engineers say that specifications assume practices that are standard with American firms. When foreign firms submit bids, they use techniques that are different. Hence specifications have to spell out these practices.

On the second bids, opened in April, GE's bid was $9,699,555. Brown-Boveri's was $9,049,625. All six bids were evaluated. The specifications required a base efficiency of 97.90% in the generators. For each 0.01% of efficiency over this base, bidders were given a $4,250 credit. On this basis, the evaluated bids came up:

General Electric	$ 8,896,305
Brown-Boveri	8,912,625
Westinghouse	9,738,344
Elliott Electric, Ridgway, Pa.	10,035,716
English Electric & Export	11,077,204
Allis Chalmers	12,864,950

The award went to GE.

• Customers like competition—There are buyers of big electrical equipment who call foreign competition a blessing. Time was, these buyers say, when firm bids were hard to get; manufacturers insisted on an escalator clause with so much latitude that it was difficult to figure what the final price would be. These buyers credit foreign competition with eliminating this.

But the foreign competitors have had no picnic. They face complications because of the language barrier and differences in their design and manufacturing practices. Also, they must meet National Electric Manufacturers Association and American Standards Association standards. Therefore, measurements must be in inches rather than centimeters, and screw threads and bolts must be American standards.

Brown-Boveri, among others, has tooled up to meet American specifications on big machines. But generators are complicated, requiring a lot of ancillary equipment such as small motors. Rather than make all this gear over to American standards, this firm planned (for Oahe) to buy motors in the U. S. and connect them to their generators.

Meanwhile, in March, GE applied to the Office of Defense Mobilization for import protection under the so-called "Defense Essentiality" clause of the Reciprocal Trade Agreements Act. The plea, under this clause, is that the national security is endangered by imports of heavy electrical equipment—that it is essential to have U. S. equipment, serviced by U. S. companies, in U. S. installations in case of war. The effect would be that all future purchases of heavy electrical equipment by the U. S. government would have to be from domestic firms.

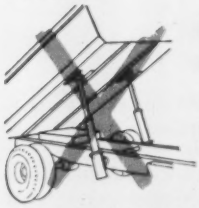
The GE application is now under study, but final action, if any, must be taken by the President.

(*B&F continued on page 112*)

Output increased 9%

What's the dumping time of your hauling units — 15, 20, 25 seconds? Right there is where you can save time, get more trips an hour by dumping in *one second* with Koehring® 6-yard Dumptor®. It has no slow-acting mechanical hoist. Operator trips the body-release lever, and *gravity* tilts the body 70°. One second later the load is out, and Dumptor is on its way back for the next load.

This adds up to a substantial increase in extra yards hauled per hour. For instance, take a typical 1,000-foot haul where an ordinary dump truck would make 16 trips an hour. Allowing the same time to load, haul and return, Koehring Dumptor would average 17½ trips on the same cycle. That's because one-second dumping cuts 20 seconds off cycle time — gains a total of 320 seconds, or 5.3 minutes more productive time per hour — gives you 17½ trips, instead of 16. This, alone, adds 9% to hourly yardage output with Koehring Dumptor. But that's not all —



No body-hoist maintenance

There are no expensive body-hoist replacement parts, no hoist maintenance or down-time delays, because *gravity-dump* never balks, never wears out. You get the same one-second dumping *every time.* What's more — Dumptor has no springs — just one big snubber type shock absorber on steering axle. Big shock absorbing tires eliminate the need for springs on the drive axle. No springs — *no spring maintenance!*

Add up *your* dump-time, body-hoist and spring-maintenance costs — see for yourself how much you can save by hauling with Koehring heavy-duty Dumptors. Check too, how *no-turn* shuttle-hauling cuts another 15 to 30 seconds off cycle time. Call Koehring distributor about it *today* — or write for new catalog.

KOEHRING DIVISION of Koehring Company, Milwaukee 16, Wisconsin

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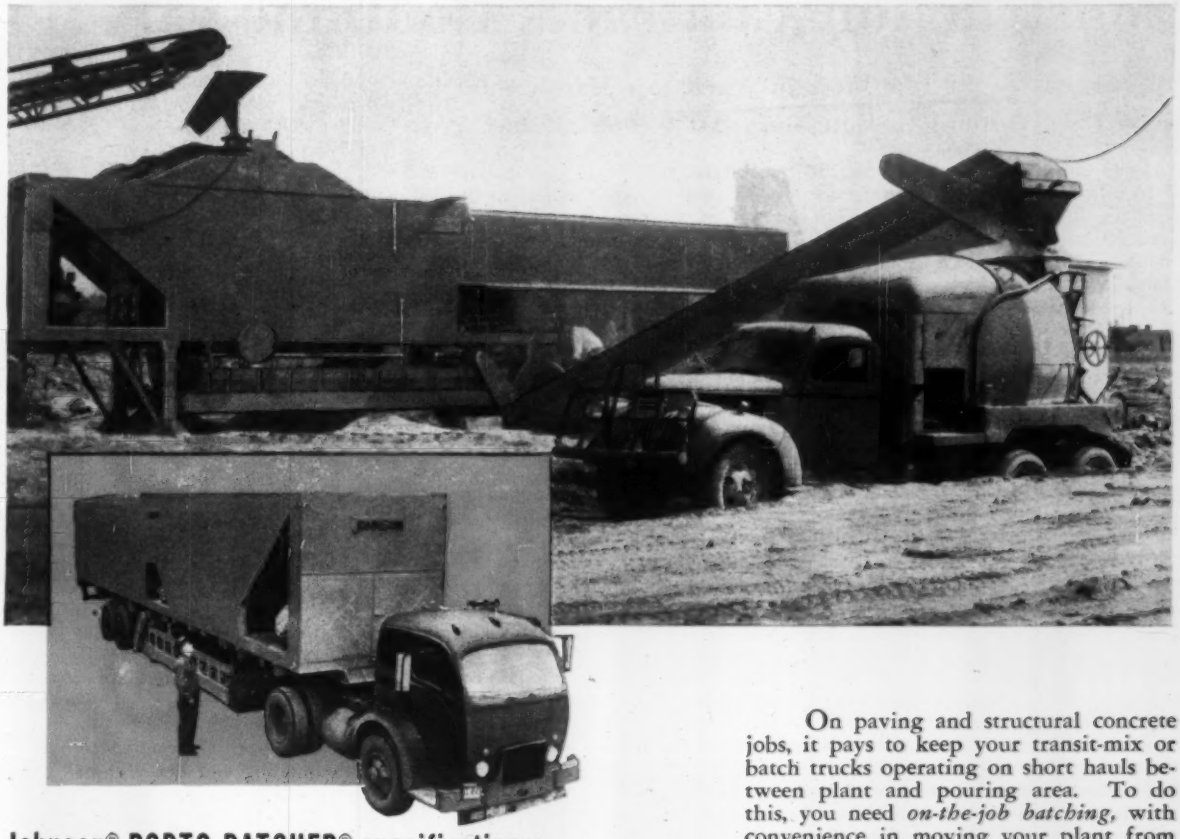
A BIG batch plant with PICK-UP-AND-GO portability



Johnson® PORTO-BATCHER® specifications:

- **Capacity, 4-compartment aggregate bin: 39 cu. yds. heaped — 46 yds. with 12-in. sideboards.**
- **200-bbl. cement compartment; 650-gal. built-in water tank.**
- **Full-automatic interlocked batch control with repeater.**
- **4 aggregates are weighed in 2 hoppers — with 2 aggregates in each hopper.**
- **2 aggregate scales have two 2,000-lb. weigh-beams each.**
- **Cement is weighed in *separate*, covered hopper — equipped with a 1,000-lb. weigh-beam scale.**
- **Enclosed discharge conveyor has 11'6" ground clearance for transit-mix trucks; 8'10" clearance for batch trucks.**
- **230-bbl.-per-hour cement elevator with boot hopper, or screw conveyor; undertrack shrouds, or truck hopper.**
- **All internal wiring factory-installed, complete with starters, circuit-breakers in panel, motor controls, etc.**

On paving and structural concrete jobs, it pays to keep your transit-mix or batch trucks operating on short hauls between plant and pouring area. To do this, you need *on-the-job batching*, with convenience in moving your plant from one site to the next — *and here's your opportunity!*

With a Johnson Porto-Batcher, you just pick up *and go* — get set at new site, ready to work in as little as a day's time. It consists of 3 portable trailer units on wheels: main plant, discharge conveyor, cement elevator — complete with 5th-wheel-plate or towing eye, brakes, lights, etc. Main trailer width is 8½ feet — height 12½ feet — length 44½ feet. *No* complicated re-assembly, heavy concrete pedestal foundations or high lifts, as with conventional stationary plants. Porto-Batcher produces 60 to 80 batches an hour, depending on size of trucks and batch quantities. You just set the weigh-beams and water-pointer — set repeater for number of batches needed — press the starter button, and Porto-Batcher weighs out the exact number of batches *automatically*.

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Construction Contracts Continue Climb

Awards of $1.6 billion in April top March total by 13%; volume to date only 10% behind last year

Heavy construction contract awards in April continued their resurgence noted in this year's first quarter (ENR April 10, p. 115) with a total of $1.6 billion. This is a 13% jump over March and is 8% higher than April 1957. Moreover, the total narrowed the spread between volume to date this year and the same period last year to only 10%.

Private contracts reached the year's peak with a total of $813 million in April, which is the second consecutive month this year that award volume outstripped that of the same month in 1957. In addition, the improvement over April 1957, was 11%; while last March's improvement over the same month of 1957 was only 1%.

• **Housing awards shine**—Credit for April's good showing goes to private mass housing, which soared to $538 million, twice as much as last March and April of last year. The spurt chiefly is due to the New Jersey Levittown project of $250 million, plus a $15 million redevelopment project in St. Louis and two Illinois housing projects of $10 million each. So far this year, private residential contracts top $1 billion, a 19% boost over the first four months of 1957.

Private industrial and commercial contracting in April sagged to the low point of the year. However, commercial awards to date are still holding above 1957 by 4%. A $21.4 million shopping center for Portland, Ore., was the feature of the month in this classification.

• **Industrial awards**—Contracts for industrial construction during April were down 17% from March with a total of $110 million. Among important contracts were a $19 million coal preparation plant in Virginia, a $12 million nuclear test reactor in North Carolina, and a $7.5 million aromatics processing plant for Sinclair Refining Co. in Texas.

Highway awards succeeded in scoring a new high for the year with a total of $267 million. This is a 5% rise over March and 20% over April 1957. In addition, this is the best rate of highway contracting since last July, measured on a weekly average basis. Ohio, Texas, California, Oklahoma and Illinois let sizable road contracts during the month.

Earthwork, bridge, waterworks and unclassified public projects also expanded their volume substantially over the March total. Earthwork and waterworks contracts of $64 million and $29 million, respectively, also scored gains over last year's volume. Earthwork gained 87% last year and waterworks picked up by 80%.

Unclassified public contracts of $105 million were 47% over March but still were below April 1957, by 7%.

ENR Cost Indexes Move Sharply Upward in May

Construction costs moved up sharply in May as new contracts and deferred increases boosted common labor wage rates in three of the ENR 22 cities. The ENR Construction Cost Index rose almost 5 points to a record high of 751.57. This was 0.8% above April's reading and 5.0% over last year. The ENR Building Cost Index for May, however, is up only slightly despite increases in skilled labor wages in two cities. This index is 518.48 in May, 0.4% higher than in April and 3.1% above last year's reading. Both indexes are based on 1913 = 100.

The hourly wage rate for common labor advanced in three cities. Los Angeles reports the biggest hike—20½ cents per hour for common laborers on both building and heavy construction, which makes the new wage $2.78 per hour. In Boston, common laborers signed a new contract providing for a 15-cent per hour raise for common labor in heavy construction, moving hourly pay to $2.57. Common laborers

Engineering Construction Contracts — April '58

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	April, 1958							U. S. Cumulative Four Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958	1957	'57 to '58	April 1958
Public Works											
Waterworks	658	4,017	3,585	7,127	6,477	6,719	**28,583**	**86,102**	103,347	−17	1,704
Sewerage	2,743	9,005	2,499	7,982	9,165	3,275	**34,669**	**179,680**	136,063	+32	3,116
Bridges	1,411	5,373	4,584	11,809	14,439	9,954	**47,570**	**149,177**	238,929	−38	3,207
Earthwork and waterways	2,679	12,730	22,240	990	4,800	20,545	**63,984**	**230,260**	347,596	−34	560
Streets and roads	15,279	45,443	43,336	55,502	70,265	37,274	**267,099**	**886,441**	923,011	− 4	4,419
Public buildings, residential	3,470	16,530	6,997	621	27,509	9,248	**64,375**	**340,846**	230,770	+48	5,599
Other public buildings	7,445	34,635	21,826	30,904	35,964	27,628	**158,402**	**728,613**	727,681	+ 0.1	10,766
Unclassified	4,826	23,411	15,207	10,522	23,768	27,552	**105,286**	**248,268**	440,890	−44	3,266
Total public	**38,511**	**151,144**	**120,274**	**125,457**	**192,387**	**142,195**	**769,968**	**2,849,387**	**3,148,257**	**− 9**	**32,637**
Federal government (included in above classifications)	6,020	15,273	42,724	7,686	68,027	41,736	**181,466**	**605,763**	895,202	−32	8,007
Private											
Bridges	.....	.....	.....	.....	.....	.....	.....	.....	1,220	−100	.....
Industrial buildings	10,174	6,043	44,719	8,916	29,811	10,429	**110,092**	**645,820**	1,141,452	−43	6,353
Mass Housing	22,404	335,160	9,226	80,879	59,074	31,011	**537,754**	**1,166,067**	978,796	+19	36,455
Commercial buildings	8,411	17,439	13,681	28,381	19,170	40,642	**127,724**	**598,788**	573,402	+ 4	80,526
Unclassified	1,304	709	17,438	4,687	11,717	1,912	**37,767**	**154,538**	184,319	−16	500
Total private	**42,293**	**359,351**	**85,064**	**122,863**	**119,772**	**83,994**	**813,337**	**2,565,213**	**2,879,189**	**−11**	**123,834**
Total Engineering Construction:											
April, 1958—4 weeks	**80,804**	**510,495**	**205,338**	**248,320**	**312,159**	**226,189**	**1,583,305**	.....	.....	.....	**156,471**
March, 1958—4 weeks	86,824	317,258	159,970	262,358	302,147	269,134	**1,397,691**	.....	.....	.....	138,343
April, 1957—4 weeks	121,978	397,619	169,409	296,418	267,845	206,850	**1,460,119**	.....	.....	.....	164,879
Four Months—1958	**308,735**	**1,479,274**	**711,484**	**1,014,268**	**1,082,515**	**818,324**	.....	**5,414,600**	.....	**−10**	**475,894**
Four Months—1957	381,663	1,489,931	753,736	1,213,421	1,089,705	1,098,990	.....	.....	6,027,446	.....	557,344
% Change '57 to '58	−19	−1	−6	−16	−1	−26	.....	.....	.....	.....	−15

CASE® TERRATRAC® TAKES OVER "SHOVEL JOB"

—shaves contractor's estimate by 25%

TerraTrac's maneuverability, and long forward reach proved advantageous in loading out trucks in double-quick time.

Finger-tip, hydraulic control of tractor and front-hinged bucket enabled Harrison & Moore to complete finish-grading ahead of schedule.

Carving residential sites out of Utah's Wasatch Mountain foot-hills in the dead of winter was *no easy task*. Ground was frozen and filled with stones up to 12" diameter. Specifications called for a *smooth job — in a hurry* — including basement excavations, backfilling, lot-grading and leveling.

First machine to try it was a heavy-duty *conventional* crawler-loader but the owner quickly backed out, saying it was strictly a "shovel job". However, things began to happen when *Harrison & Moore*, land development and house building contractors of Salt Lake City, moved in with their 1½-cu. yd. Case TerraTrac "800". *Harrison & Moore not only finished the job entirely satisfactorily, but shaved 25% off the general contractor's estimated time.*

No track slippage — No engine stalling

Detachable grousers, combined with power-application benefits of torque-converter drive, enabled the smooth-running TerraTrac to break through frost and rocks with ease. TerraTrac grousers, which bolt on street shoes in 10 minutes with hand wrench, eliminated all track slippage, while the 80 HP diesel, with torque converter and foot-throttle control, provided the *steady power* needed to handle this tough digging assignment without engine stalling — even under the adverse grade conditions encountered.

According to partner "Arv" Harrison, TerraTrac's exclusive power-shift transmission and hydraulic power-steering were also major factors in maintaining production. Says Harrison, *"The speed and handling ease of the '800' — especially the hydraulic finger-tip shifting from one speed to another and from forward to reverse, while on the fly — is incomparable."*

Why not get *these same money-making TerraTrac advantages on your jobs RIGHT NOW*. Call your nearest Case Industrial Dealer today for full details on the size rig best suited to your needs. Also ask about the new Case financing and LEASE plans — which let you buy or rent these *new* advance-design Case TerraTrac machines *on easy monthly terms* to fit your budget.

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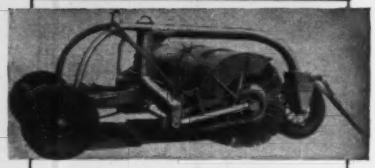
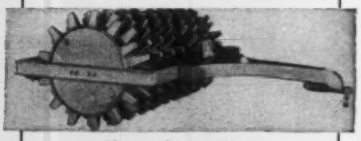
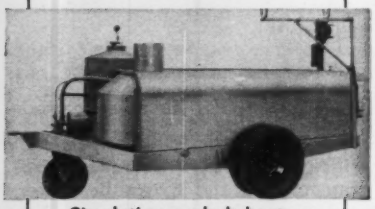


Roadsweepers, traction, engine-driven or tractor-mounted

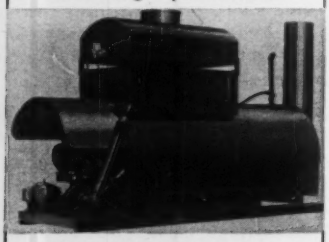


Sheepsfoot rollers

Chip spreaders



Circulating asphalt heaters



Automatic oil heaters for hot plants

Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.
6015 S. LAMAR ST.
DALLAS, TEXAS

in building construction won a 10-cent hourly advance, boosting their wage to $2.62. Deferred increases for common labor in both building and heavy construction in St. Louis became effective May 1, raising the hourly wage 12½ cents to $2.725.

Skilled labor wage rates also were up in May. Los Angeles carpenter wages rose 15 cents to $3.475, under a deferred increase. In St. Louis, carpenters and structural ironworkers received a deferred increase of 12½ cents, bringing their current wage to $3.675 per hour.

Materials prices in the index changed slightly from a month ago. Lumber prices continued firm after a long decline. Douglas fir 2 x 4 prices showed a 1.2% advance over April, while southern pine 2 x 4 prices rose 1.1%. The price of bulk Portland cement rose 13 cents per bbl in Cincinnati but boosted the U. S. average only 0.1% over April.

Spur for Building

Bill to reinstate fast tax writeoff wins some support

Now that an individual income tax cut has lost its political appeal in Washington, the search is on for other anti-recession tax adjustment measures that will give the faltering economy a boost.

Sen. Homer Capehart, with support from some impressive quarters, has come up with one such idea that could have significantly beneficial effects on the construction industry.

Senator Capehart's proposal: Reinstatement of rapid amortization—the fast tax writeoff—for new capital investment in plant and equipment for a limited time. The senator has introduced a bill that sets the limit at 18 months, retroactive to a Jan. 1, 1958 beginning and with a cutoff date of June 30, 1959.

The reasoning is fairly simple. Given a tax break, so it goes, industry and business would start new plant construction or order new equipment now—in effect, priming a general economic upsurge without waiting for the economy to right itself through a natural course of events.

The legislative route through Congress is long and arduous, but Senator Capehart has begun collecting some solid support. For example, President Eisenhower at his news conference last week mentioned depreciation aid specifically among tax reduction plans worthy of special study. And the Rockefeller Brothers Fund has proposed faster depreciation on capital improvements started within the crucial 12 months just ahead. The Machinery and Allied Products Institute is seeking rapid amortization on machine tools.

• **Cost to government**—Cost considerations, from the Treasury viewpoint, will be looked at carefully if and when the Capehart measure reaches a hearing stage. First estimates from Senator Capehart himself put the cost like this: Government would have to postpone collection of between $600 million and $1 billion a year, but the Treasury would be better off over the long haul because the program would create greater tax revenues for the future.

Here, in essence, is the Capehart proposal:

• Substantially reduce the time period for depreciation of capital investment—for all business, industry and agriculture—contracted for during the specified, limited period.

• For goods now written off during a 15-year or shorter period, the time would be cut in half; that is, to a maximum time of 7½ years

• For goods and investment currently amortized in a span of more than 15 years, reduce the first 15 years by half and the remaining time by two-thirds.

• **How construction benefits**—This provision would be of special importance in construction. It would mean, for example, that in heavy industry a new plant of average construction could be depreciated in 16 years, instead of 40. Average construction in rented homes, apartment buildings and office buildings—likewise written off currently over 40 years—would get the same time schedule for depreciation under the Capehart plan if they are contracted for during the limited period he proposes.

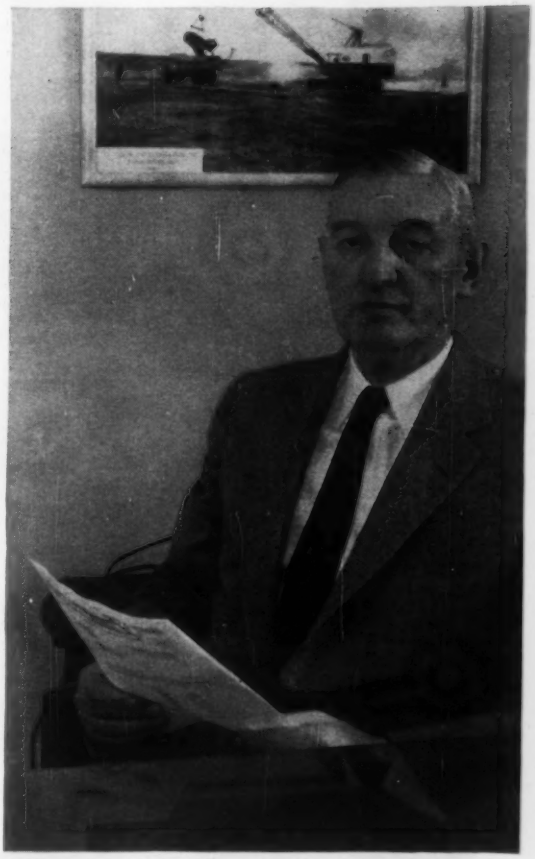
Faster depreciation and relief on some excises now appear to be the only tax liberalization measures that Congress may act upon at this session.

Some action must be taken on manufacturers' excises and corporation income taxes imposed during the Korean war. Without an extension act, the high rates will expire June 30. Action on these rates may become the vehicle for some selective excise reductions. Most likely candidates for slashing: the 10% tax on new automobiles and the 3% freight transportation tax.

Efforts will be made to cut other excises, as well, but Congress cut a number of them substantially in 1954 and the consensus in Washington now is that there will be reluctance to open up this area for widespread reductions again so soon.

How U. S. Steel Supply's Any Steel, Anywhere, Any Time Service "eliminates construction set-backs"

reported by **Mr. Frank J. Barnes,**
Project Manager, C. J. Langenfelder and Son, Inc.,
Baltimore, Maryland



"One of our construction projects recently called for 73 tons of steel in a hurry. We immediately contacted U. S. Steel Supply and delivery began the next day," says Mr. Barnes.

"A last-minute situation like this is always dangerous, for any delay in delivery would set back the project opening date—causing us severe financial penalties. And, too, our operational efficiency would suffer since construction crews and equipment would be idle.

"We have found that, through U. S. Steel Supply's Any Steel, Anywhere, Any Time Service, specific material demands, regardless of quantity, are delivered when we need them and where we need them."

If you're faced with an urgent construction problem concerning prompt delivery of a critical material, perhaps U. S. Steel Supply's Any Steel, Anywhere, Any Time Service can offer you a solution. One of our representatives will be glad to show you how it works. For more information, write to U. S. Steel Supply at the address below.

Remember... you get Any Steel, Anywhere, Any Time Service from...

U. S. Steel Supply
Division of USS TRADEMARK United States Steel

Steel Service Centers Coast to Coast
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LINCOLN ARC WELDING EQUIPMENT

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OF AIR COMPRESSORS AND WELDERS

TODAY the list of contractors who operate—and manufacturers who build—air compressors and electric welders powered by General Motors Diesels reads like a "Who's Who" of the industry.

Operators around the world have found that these modern 2-cycle Diesel engines pack more power in less space and weight—pick up under load faster than 4-cycle engines—deliver a smoother, steadier flow of power that gets work done faster.

These compact engines are designed for easier, lower-cost maintenance. Unit injectors eliminate complex fuel systems and troublesome high-pressure lines. Smaller size makes the GM Diesel more easily accessible for servicing.

Above all, interchangeable GM Diesel parts make it unnecessary to carry large, expensive parts inventories. In the 71 Series, practically all of the wearing parts are interchangeable *regardless of engine model.* This makes it easy to have the right part available when needed—speeds repairs—gets equipment back on the job with less down-time. And GM Diesel parts cost up to 60% less than comparable parts for competitive engines!

The superior performance and dependability of GM Diesels are backed by a world-wide network of distributors and dealers—with complete parts stocks and service facilities readily available throughout the United States and Canada, as well as overseas.

For more information, consult your GM Diesel distributor or write us.

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REGIONAL OFFICES: New York, Atlanta, Detroit, Chicago, Dallas, San Francisco

IN CANADA:
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London, Ontario

Parts and Service World-wide

GM
GENERAL MOTORS
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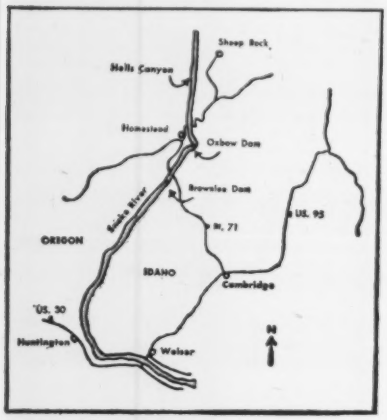
IT PAYS TO STANDARDIZE ON...

Available in 1485 applications of power equipment built by more than 175 manufacturers



In the Hells Canyon area of Idaho, a unique school for construction workers completes its first year.

Doing Does It at Equipment

Proud of its service to the construction industry, a school that knows no ivory tower celebrates its first anniversary this week.

It's the Western National School of Heavy Equipment Operation in Weiser, Idaho.

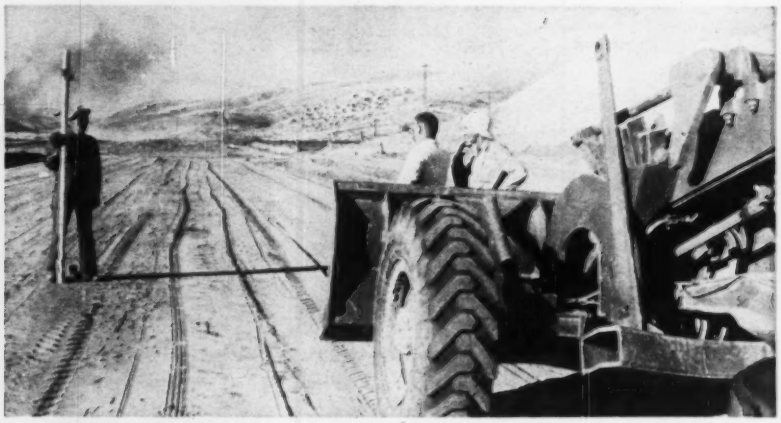
So far, the school has turned out 243 graduates—men who have learned how to handle the crawler tractor and self-propelled and tractor drawn scraper, the motor grader, or the crane, backhoe, dragline and shovel. Some have been trained in the maintenance and overhaul of earthmoving equipment. And now—as the nation's highway program unfolds—those who enroll can concentrate on the asphalt finisher.

The school is the second of its kind in the country. First was the three-year-old National School of Heavy Equipment Operation in Charlotte, N. C., which is slightly larger but otherwise identical. Purpose of both is to furnish the industry reliable and competent men to whom expensive machinery can be safely entrusted, workers who know how to move earth the day they're hired.

Emphasis is on a simple truth: "One learns best by doing." Result is that students spend the bulk of their time on a 100 acre practice range, where they get to know the equipment of their choice.

Training in field and classroom

IN THE FIELD, students learn . . .



by doing, often on actual jobs, as they get intensive daily practice . . .

and an 80-ton lowboy semi-trailer and truck.

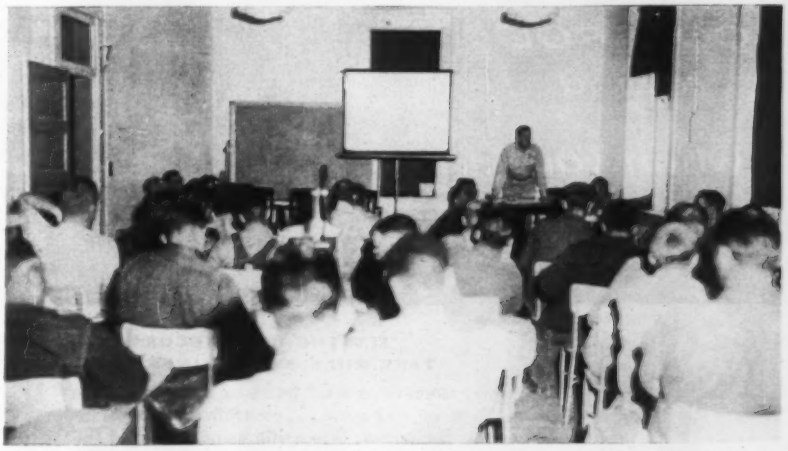
One course is for equipment field mechanics . . .

School

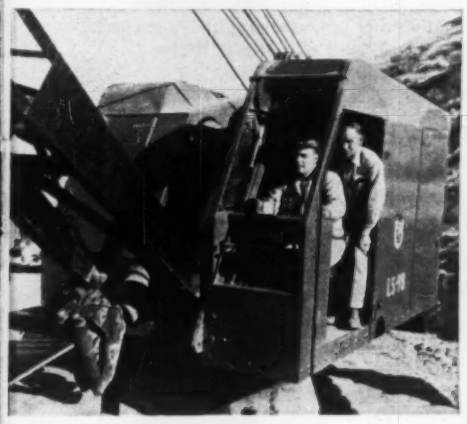
stresses preventive maintenance, safety and effective operation.

Except for an advanced course on the motor grader, Western National is designed for beginners. Only admission requirements are good character and a satisfactory showing on mechanical aptitude and comprehension tests. Courses run from two to eight weeks each. Tuition per course ranges from $200 to $750, including dormitory facilities. Meals ($18.50 a week) are extra. Monthly enrollment averages 35.

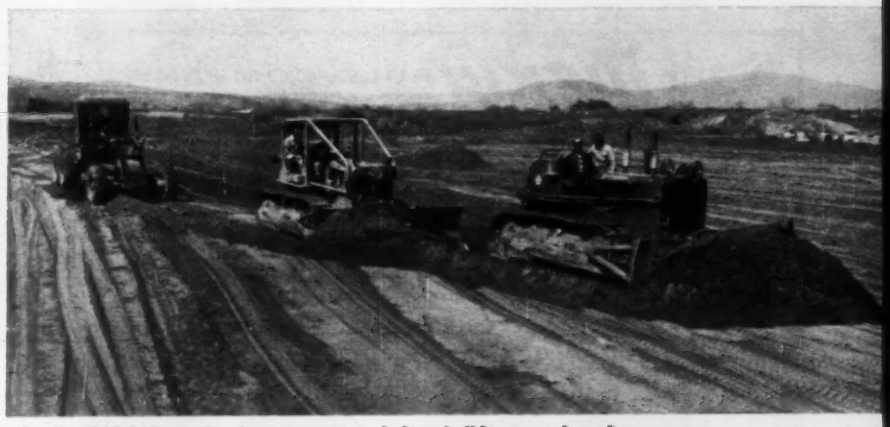
Like the Charlotte school, also founded and headed by educator Gilbert S. Shaw, Western National is a non-captive, privately incorporated, institution.



CLASSROOM work at the Western National School of Heavy Equipment Operation in Weiser, Idaho, takes a third of a student's time each day. Six courses are offered.



under close supervision on . . .



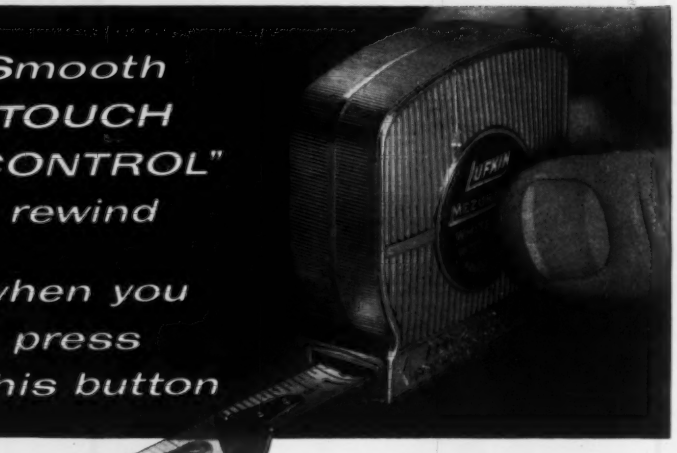
school's $317,000 worth of equipment, including bulldozers and grader . . .

another is for asphalt finisher operators.

WESTERN NATIONAL SCHOOL
OF HEAVY EQUIPMENT OPERATION
IN RECOGNITION OF THE CONTRACTORS, EQUIPMENT DISTRIBUTORS,
ALLIED TRADES AND MANUFACTURERS, WHO HAVE MADE THIS INSTITUTION POSSIBLE.
Gilbert S. Shaw, Founder
1957

CONTRACTORS, equipment distributors and others who made school possible are honored by plaque in Slocum Hall. School, like its sister in Charlotte, N. C., is privately owned.

Smooth "TOUCH CONTROL" rewind when you press this button



IT'S THE NEW MEZURMATIC TAPE RULE BY LUFKIN!

A new automatic rewind lets you bring back the blade at the speed you want . . . controlled by an exclusive "ball-bearing" governor. When you want to rewind the blade, just press the big button. Release the button . . . the blade stops instantly . . . and it will not "creep". See the new Mezur-Matic on display now at your hardware store. It comes in the standard White Clad® blade or the all-metal Chrome Clad® blade.

THE LUFKIN RULE COMPANY
TAPES • RULES • PRECISION TOOLS
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Don't take chances with "price" ladders. Step up with confidence on UL-approved *Louisville* aluminum ladders, planks and stages—*the equipment with safety built-in!* Check the yellow pages for nearest distributor, or write us direct.

BUILT-IN SAFETY

Exclusive *Louisville* "boss" rung-to-rail assembly insures against ladder sway and rung turning and loosening. Ask your *Louisville* distributor to demonstrate.

Round Peg in "Hex" Hole Riveted to Rung.

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Unions Vie Over Rights To Do New Construction

The off-again, on-again feud between AFL-CIO craft and industrial unions erupted again last week and a peace plan worked out last winter to settle the union's long-standing jurisdictional disputes took a sizable jolt.

At top level conferences of the AFL-CIO Executive Council, meeting in Washington, D. C., the Building Trades Department complained that the United Steelworkers Union is not honoring the agreement and is disrupting the whole plan. According to the craft unions, 36% of their job troubles with industrial unions are with David McDonald's steelworkers.

AFL-CIO President George Meany sought to keep the agreement alive by pledging that the council would investigate the complaint.

According to Mr. Meany, the steelworkers claim they cannot honor the peace plan because they have traditionally done new construction work in some plants and consider it theirs.

Under the peace formula, new construction work is considered that of the building trades; production and running maintenance work that of industrial unions. Disputes over work between these two areas are to be settled on the basis of past practice.

Industry Gets a Reprieve On Hiring Practice Issue

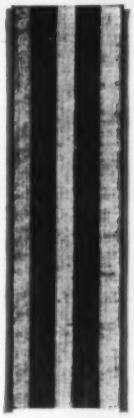
Contractors and building trades unions have been given a three-month breathing spell in which to bring their hiring practices into line with the law as interpreted by the National Labor Relations Board.

The reprieve was granted last week by NLRB general counsel Jerome Fenton who has notified members of the industry that "full application" of the Brown-Olds rule will be withheld until September 1.

The action was taken after Richard Gray, President of the AFL-CIO Building Trades Department, had requested more time in which to permit the industry to take corrective action.

The problem stems from an NLRB determination to force the construction industry to eliminate all hiring practices that discriminate against nonunion employees. Penalty it threatens to impose for violations is one taken from an old decision (Brown-Olds) that makes both the union and employer liable for all union dues and assessments collected during the period of violation.

The NLRB threat has induced a general review of hiring clauses in collective bargaining agreements.



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SAVE ON RE-USE. The overlaid surface is resistant to harsh aggregates, can be used over and over, eliminates rebuilding forms during job.

SAVE ON SMOOTH, PAINTABLE SURFACES. The hard, glossy form assures smoothest possible concrete, reduces finishing time and labor to a minimum, eliminates expensive plastering. *Specify "Simpson High Density Concrete Form."*

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PD-82B

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: May 15, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 15th day of May 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Albany	FISH 58-3	Interstate Route 502, Sect. 2, Cont. 1 (Latham to Mohawk River) Project I-1119(16)	3.04 (3.70 Acc.)	9" Cement Concrete Pavt.=2.90 Mile; Asphalt Concrete=0.11 Mile; Misc. Work=0.03 Mi. including 4 Hwy. Gr. Sep.-Comp. Beams 234.5', 231', 131.5'; 135.5' Pier Footings for Future H.G.S.	$230,000 Plans $10	$4,199,000
Essex (Rtes. 8, 9N, 22)	RC 58-36	Ticonderoga-Crown Point, Pt. 1, S.H. 891 Ticonderoga-Crown Point, Pt. 2, S.H. 1176 Crown Point-Port Henry, S.H. 841	14.42	Asphalt concrete	$30,000 Plans $2	$540,000
Essex (Rte. 28N)	FARC 58-30	Aiden Lair-Newcomb, Pt. 2, S.H. 756 Newcomb-Long Lake, Pt. 1, S.H. 5188 Project S-210(3)	9.49	Asphalt Concrete=9.49 Mi. Including Br. No. 1, Prestressed Conc. Beam 3 Spans 70' Ea. Br. No. 2, Reinf. Conc. Closed Box 25.5'	$115,000 Plans $10	$2,104,000
Rensselaer	FASS 58-6	West Sand Lake-Poestenkill-Cropseyville, Pt. 3 (County Road). Project S-486(2)	0.43	Asphalt Conc.=0.39 Mi.; Misc. Work=0.04 Mi. Incl. Br. No. 1 Pres. Conc. 2 Spans 49.8' Ea.	$12,000 Plans $2	$204,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica, 1, New York						
Oneida (Rte. 69)	FARC 58-31	Whitesboro-Yorkville, Pt. 1, S.H. 8510 Project F-693(5)	1.92	Asph. Conc. Ty. 1A=0.53 Mi.; Widen & Resurface=1.39 Mi. Including Conc. Slab Br. 3 Spans, 22' Ea.	$56,000 Plans $3	$1,030,000
Herkimer, Madison & Oneida (Rtes. 5, 20, 12)	RC 58-22	Seven Various Highways in District No. 2	18.68	Subsealing Cement Concrete Pavt.	$18,000 Plans $2	$331,000
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washing St., Syracuse, New York						
Oswego	M 58-6	Oswego Grain Elevator and Terminal City of Oswego	....	Asph. Conc. Access Road	$450 Plans $10	$8,300
Tompkins	FAC 58-3	City of Ithaca Arterial: Meadow St., Seneca St., Green St. Project U-427(9)	1.35	Asph. Conc. Type 2A	$38,000 Plans $3	$680,000
Wayne (Rte. 21)	FARC 58-23	Marion-Williamson, Pt. 2, S.H. 1406 Project F-1140(1)	0.35	Asph. Conc. Type 1A=0.31 Mi. Misc. Work=0.04 Mi.	$5,000 Plans $2	$86,600
Wayne (Rte. 14)	FARC 58-25	Lyons-Sodus Point, Pts. 2 & 3, S.H. 1060 Project F-1145(1)	0.54 (0.12 Acc.)	Asph. Conc. Type 1A=0.50 Mi. Misc. Work=0.04 Mi.	$10,000 Plans $2	$182,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston & Ontario (Rtes. 5 & 20)	FARC 58-29	Lima-East Bloomfield, Pt. 1, S.H. 5142 Lima-East Bloomfield, Pt. 2, S.H. 5041 Project F-343(14)	0.47	Asph. Conc.=0.45 Mi.; Misc. Work=0.02 Mi. Including Br. No. 1, Prestressed Conc. 2 Spans 70.2' Ea.	$28,000 Plans $2	$520,000
Monroe	FAC 58-6	Rochester City: Inner Loop (Front St. to North St.) Project U-1089(8)	0.63	Demolition	$12,000 Plans $2	$206,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Schuyler	FASS 58-12	Montour Falls-Townsend, C.R. No. 398 Project S-446(1)	1.60	Top Course Bit. Mac. Type 1	$16,000 Plans $2	$293,000
Steuben (Rte. 21)	FAC 58-4	Hornell City: West Main St. Project F-589(5)	0.31	Asph. Conc.=0.31 Mi. Including Viaduct & Br. Repair Truss & Girders 840' Total Span	$30,000 Plans $3	$547,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence (Rte. 56, 56A)	FARC 58-32	Norwood-Norfolk, S.H. 967 Norfolk-Raymondville, S.H. 1587 Project S-507(1)	0.29	9" Cem. Conc. Pavt.=0.24 Mi.; Misc. Work=0.05 Mi. Including Br. No. 1, Comp. I-Beam, 3 Spans, 240' Total Br. No. 2, I-Beam, Single Span 64'	$18,000 Plans $3	$328,000
St. Lawrence (Rte. 37C)	FARC 58-26	Massena-Helena, Pt. 2, S.H. 1265 Project S-367(2)	1.35	Asph. Conc.=1.32 Mi.; Misc. Work=0.03 Mi. Including Br. No. 1, Prestressed Conc. 4 Spans 75' Ea.	$30,000 Plans $3	$523,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Putnam (Rte. 6)	FGRC 58-24	Brewster-Carmel, S.H. 909 Project FG-590(3)	0.14	9" Cem. Conc. Pavt.=0.14 Mi. Including R.R.G.S. (NYC RR) Plate Girder Single Span 103.6'	$19,000 Plans $2	$349,000
Ulster (Rte. 299)	FARC 58-33	Highland-New Paltz, S.H. 1536 Project F-1109(1)	5.10	9" Cem. Conc. Pavt.=4.84 Mi.; Asph. Conc.=0.26 Mi. Including Br. No. 1 Composite W.F. Beam 85' Span	$120,000 Plans $5	$2,152,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Schoharie (Rte. 30)	FARC 58-34	Grand Gorge-Breakabeen, Pt. 4, S.H. 8070 Middleburg-Breakabeen, S.H. 5577 Project S-459(3)	0.78 (0.06 Acc.)	Asph. Conc.=0.78 Mi. Including Br. No. 2, Prestressed Conc. Single Span 72'	$20,000 Plans $2	$346,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	LP 58-1	loop Parkway (Lido Blvd. at Long Beach to Meadowbrook State Parkway)	3.00 (0.17 Acc.)	Asph. Conc.=2.63 Mi. Misc. Work=0.37 Mi.	$40,000 Plans $3	$696,000
Suffolk (Rte. 27A)	FARC 58-27	Bayshore-Brookhaven Town Line, S.H. 5301 Project S-442(2)	0.97	Asph. Conc.=0.86 Mi. Misc. Work=0.11 Mi.	$29,000 Plans $2	$511,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON

SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: May 27, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF RELOCATED
ELECTRICAL FACILITIES IN
LEWISTON, NIAGARA AND NIAGARA FALLS
NIAGARA COUNTY
NEW YORK
SPECIFICATIONS NO. PA-N-25034
NIAGARA CONTRACT NO. N2

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the complete installation of the relocated electrical facilities in Lewiston, Niagara and Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 27th day of May, 1958, at the Authority's Office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:

Estimated:	
16,000 cu. yds.	Concrete
5,800,000 pounds	Erecting structural steel structures
440 structures	Wood pole structures-various types from 12 kv to 230 kv
82 miles	Line Conductors
60 miles	Overhead ground wire
4,000 lin. ft.	4 conduit duct bank
2,500 lin. ft.	6 conduit duct bank

The word shall be completed on or before December 31, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained only from the Power Authority of the State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-Five Dollas ($25.00) for initial set of Contract Documents and Fifteen Dollars ($15.00) for each additional set, no part of which will be refunded. Plans, Specifications and Proposal Forms will be on file in the Outhority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Mass., for the inspection by prospective bidders.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: June 4, 1958.

Construction of Outfall and Trunk Sewers

Sealed bids for Sections "A", "B" and "C" for the construction of Outfall and Trunk Sewers for the Gates-Chili-Ogden Sewer District, will be received by the Monroe County Sewer Agency at its office at 406 Terminal Building, 65 Broad Street, Rochester 14, New York until 11 o'clock A.M., E.D.T., on the 4th day of June, 1958.

Bidding forms can be obtained and plans and specifications examined at the office of the Sewer Agency or the office of the Lozier Company, Engineers, 10 Gibbs Street, Rochester 4, New York.

Copies of plans and specifications may be obtained upon the payment of twenty-five dollars ($25.00) for each set of any single section or fifty dollars ($50.00) for each set of all three sections, which will not be refunded.

The work consists of the construction of:

SECTION "A"—approximately 4 miles of sanitary sewers 8" to 30" in diameter with all appurtenances.

SECTION "B"—approximately 27 miles of sanitary sewers 8" to 21" in diameter with all appurtenances.

SECTION "C"—approximately 17 miles of sanitary sewers 8" to 21" in diameter with all appurtenances.

COUNTY OF MONROE
BY: C. A. Bennett,
Purchasing Agent

April 14, 1958

OFFICIAL PROPOSALS

Bids: May 27, 1958.

Official Notice to Contractors Filter Plant Addition City of Sheboygan, Wisconsin

Sealed proposals will be received by the Board of Water Commissioners of the City of Sheboygen, Wisconsin at the Commission's office in the City Hall in Sheboygen, Wisconsin, until May 27, 1958, at 2:00 P. M., D.S.T.*, for the construction of a Filter Plant Addition, at which time and place all bids will be publicly opened and read.

The work will be divided into the following contracts:

Contract "A"—36" Concrete or Steel Pipe Intake.
Contract "B"—First Branch—General Construction
Second Branch — Plumbing and Drainage
Third Branch—Heating and Ventilating
Fourth Branch — Electrical Work
Contract "C"—Filter Equipment
Contract "D"—Mixing Equipment
Contract "E"—Pumping Equipment

All bids shall be prepared on the forms provided by the Commission and submitted in a sealed envelope addressed to the Board of Water Commissioners, Attention J. C. Zufelt, Supt., Sheboygen, Wisconsin, properly identified with the name of the bidder.

Contract documents including plans and specifications are on file and may be examined at the office of the Board of Water Commissioners in Sheboygen, Wisconsin, and the office of Alvord, Burdick & Howson, 20 N. Wacker Drive, Chicago 6, Illinois.

Contractors desiring to submit proposals may obtain plans and specifications and other documents from Alvord, Burdick & Howson, 20 N. Wacker Drive, Chicago 6, Illinois. A deposit of $15.00 will be required for each set of contract documents which deposit will be returned if a bona fide bid is submitted or the documents returned in good condition, one hour before bids are opened.

The Board of Water Commissioners reserves the right to reject any or all bids, waive any informality in bidding and award a contract to the best interests of the Board of Water Commissioners.

No bids shall be withdrawn after the opening of the bids for a period of 30 days thereafter.

The letting of the work described herein is subject to the provisions of Section 62.29 of the Wisconsin Statutes, 1955.

Wage rates as established and set forth in the contract documents in accordance with provisions 66.293, Wisconsin Statutes, 1955, shall be paid.

No bid will be received unless accompanied by a certified check or a bid bond equal to at least 5 per cent but not more than 10 per cent of the bid payable to the Board of Water Commissioners, City of Sheboygan, Wisconsin, as a guarantee that if his bid is accepted, he will execute and file the contract and bond forming a part of the specifications within 10 days after the award of a contract.

Compiled and published by authority of the Board of Water Commissioners of the City of Sheboygan, Wisconsin.

*Daylight Saving Time

BOARD OF WATER COMMISSIONERS,
CITY OF SHEBOYGAN, WISCONSIN
ARTHUR H. GRUHLE
E. S. FESSLER
EMIL MARQUARDT
J. C. ZUFELT, Supt.
Alvord, Burdick & Howson
20 N. Wacker Drive
Chicago 6, Illinois

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5044) will be received at Camp White, 9 miles north of Medford, Oregon until 10 a.m. Pacific Standard Time, June 3, 1958, for furnishing labor and materials for Emigrant Dam Enlargement, Rogue River Basin Project, Oregon. Location near Ashland, Oregon in Jackson County. Principal items are 1,603,000 cu. yds. excavation; 1,500,000 cu. yds. embankment; 4,400 cu. yds. concrete; and other work. Completion time 970 days. For particulars, address Bureau of Reclamation, P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: June 3, 1958.

Davenport Bridge Commission Contract No. 1

SUBSTRUCTURE FOR THE EXPANSION AND IMPROVEMENT OF THE IOWA-ILLINOIS MEMORIAL BRIDGE
Over the Mississippi River Between Bettendorf, Iowa and Moline, Ill.
INVITATION TO TENDER

The Davenport Bridge Commission of the City of Davenport, Iowa, invites proposals for the construction of the substructure and a portion of the approach embankments for the expansion and improvement of the Iowa-Illinois Memorial Bridge over the Mississippi River between Bettendorf, Iowa, and Moline, Illinois. Sealed proposals for the Work described below will be received by the Davenport Bridge Commission in the Office of Mayor, City Hall, Davenport, Iowa, until 10:00 A.M. Central Standard Time, June 3, 1958. Proposals will not be received after this hour. At 10:00 A.M. of the same day and date, the proposals will be publicly opened and read.

This Contract, Contract No. 1 consists of the furnishing all materials for and the construction of two anchorages and four piers for the suspended spans, seven piers to support the deck truss and half-through truss spans, ten piers and an abutment on the Moline Approach and fourteen piers and an abutment on the Bettendorf Approach to support the deck girder approach spans, two pedestals on the downstream face of the existing Moline Anchorage, all "ready for superstructure erection", and other incidental construction, all for a second two-lane highway bridge adjacent to and approximately 72 feet downstream from the existing Iowa-Illinois Memorial Bridge, throughout similar in construction to such existing bridge, together with improvements of the approaches at the entrances to the bridge and the widening and improvement of the toll plaza and administrative facilities at the Moline Anchorage, to provide upon completion of the entire project, together with the existing bridge, a four-lane divided highway facility approximately 5505 feet in length. All work is to be accomplished without interruption to the two-lane traffic on the existing bridge.

A fuller description of the work to be done and of the requirements, provisions and details thereof, is given in the Contract Drawings and Specifications, copies of which are on display in the Office of the Mayor of the City of Davenport, Iowa; in the office of the Resident Engineer, 1429 State Street, Bettendorf, Iowa; and in the offices of the Engineers: Modjeski and Masters, Sixth Street at Forster, Harrisburg, Pennsylvania; or may be obtained from the latter office upon deposit of Twenty Dollars ($20.00) per set. Deposit checks shall be made payable to Modjeski and Masters.

Deposits of all bona fide bidders will be refunded upon return of documents in good condition within ten (10) days after receipt of bids. All other deposits will be retained.

No proposal will be received unless accompanied by a certified check satisfactory to the Commission, drawn upon a National Bank organized under the Laws of the United States or upon a State or Savings Bank or Trust Company organized under the Laws of the State of Iowa, and in either case having an office or place of Business in the State of Iowa, and payable to the order of the Davenport Bridge Commission for the sum of Eighty-five Thousand Dollars ($85,000) as security for the proper execution of the Contract. Such check must not be enclosed in the sealed envelope containing the bid, but must be delivered to the Office of the Mayor. Receipt for the deposit will be given by the Commission.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids; to award the Contract only to those experienced in this class of work and to the Bidder whose proposal is deemed by the Commission to be most advantageous to the public interest. The provisions of the above Invitation to Tender are made for the benefit of the Commission and no right shall be deemed to accrue to any person making a proposal by reason of the submission of any proposal hereunder or by the waiver or non-enforcement of any provision or requirement of the Invitation.

Dated: May 1, 1958

THE DAVENPORT BRIDGE COMMISSION
DAVENPORT, IOWA
By S/ H. G. Lohmiller
Secretary
(Mailing Address: P. O. Box 719
Davenport, Iowa)

OFFICIAL PROPOSALS

Bids: May 29, 1958.

New Jersey Turnpike Authority

Contract Nos. N-88A, N-88B, N-88C and N-88D

Posposals are invited for the Contracts listed below which involve the reconstruction of foundations and floors, including additional piles, and other incidental work at existing Buildings G and H, at the U. S. Army's Caven Point Terminal, New York Port of Embarkation, Jersey City, New Jersey, in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

Contract No. N-88A General Construction Work
Contract No. N-88B Heating and Ventilating Work
Contract No. N-88C Plumbing Work
Contract No. N 88D Electrical Work

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Daylight Saving Time on the morning of May 29, 1958 at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after May 7, 1958 at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 99 Church Street, New York 7, New York. Contract documents will be furnished upon payment of Ten ($10.00) Dollars for each set, upon application to the Authority. Contract documents are not required to be returned and payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr
May 1, 1958 Chairman

Bids: May 27, 1958

Contract NYA-250.050

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
PAVING AND UTILITIES TO SOUTHWESTERLY HANGAR SITES

Sealed proposals for the construction of pavement and utilities to the Southwesterly hangar sites at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 27, 1958, at which time said propasals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, May 8, 1958

U. S. Government

Sealed bids for Ninth Avenue Tunnel, at the U.S. Post Office, Morgan Annex (341 Ninth Avenue), New York, will be received until 2:00 P.M. E.D.S.T., June 6, 1958, c/o Business Service Center, Ground Floor, 250 Hudson Street, New York 13, New York, and then publicly opened. Bidding material may be obtained from the Business Service Center, Ground Floor, General Services Administration, 250 Hudson Street, New York 13, New York.

OFFICIAL PROPOSALS

Bids: May 15, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF THE REYNOLDS SUBSTATION
NEAR ROOSEVELTOWN
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-8-25
CONTRACT NO. T10

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Reynolds Substation near Rooseveltown, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 15th day of May 1958, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

The work includes but is not limited to the installation of the following Authority furnished equipment consisting of structural aluminum members for the substation, transformers, power circuit breakers, disconnecting switches, lightning arresters, insulator assemblies and bus supports.

The work also includes but is not limited to the furnishing and installation of all foundations required by the work of the contract, the installation of two (2) aluminum transmission structures, the installation of the 13.8 kv transmission line from Reynolds Substation to a point on first wood pole structure of General Motors line and the installation and connection of the 115 kv transmission line from the terminal structures of Reynolds Power Supply line to the Reynolds Substation, all in accordance with the requirements of these specifications.

The work shall be completed on or before February 1, 1959.

Plans, Specifications and Proposal Forms may be obtained only from the Power Authority of the State of New York, at The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of ten ($10.00) dollars for initial set of Contract Documents and five ($5.00) dollars for each additional set, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, for the inspection by prospective bidders.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than twenty (20) percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: June 10, 1958.

Contract NA-470.002

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTROL TOWER

Sealed proposals for the construction of a new Control Tower at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. Tuesday, June 10, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, May 8, 1958

OFFICIAL PROPOSALS

Bids: May 20, 1958.

Contract PN-502.325

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS 293, 294, 295
AND WHARF
LOAD TESTS ON EXISTING PILES

Sealed proposals for making load tests on existing piles and for extracting existing piles in the wharf on the northerly side near the inshore end of the City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 20, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, May 8, 1958

Bids: May 19, 1958

Washington Suburban Sanitary Commission Contract No. 2153-W

FURNISHING AND DELIVERING
COMPOUND WATER METERS

Sealed proposals for furnishing and delivering 15 each 2-inch and 10 each 3-inch COMPOUND WATER METERS, will be received in the office of the Purchasing Agent, Room G-13 of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland, until 10:30 A.M. Eastern Daylight Saving Time, May 19, 1958, at which time and place they will be publicly opened and read.

Specifications may be obtained from S. Z. Salsberry, Purchasing Agent of the Commission.

T. Earle Bourne
Chairman
Frank L. Hewitt, Jr.
Vice Chairman
J. Norman Ager
James Bland
Willard A. Morris
L. S. Ray
Commissioners

ATTEST:
John T. Bonifant
Secretary

Bids: June 4, 1958

Construction of Sewage Pump Stations

Sealed bids for the construction of Sewage Pump Stations, for the Gates-Chili-Ogden Sewer District, will be received by the Monroe County Sewer Agency at its office at 406 Terminal Building, 65 Broad Street, Rochester 14, New York, until 11 o'clock A.M., E.D.T., on the 4th day of June, 1958.

Bidding forms can be obtained and plans and specifications examined at the office of the Monroe County Sewer Agency, or the office of The Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications for each set may be obtained upon the payment of ten dollars ($10.00) each, which will not be refunded.

The work consists of the construction of: SECTION "G"—Two Sewage Pump Stations.

COUNTY OF MONROE
By: C. A. Bennett,
Purchasing Agent

April 14, 1958

OFFICIAL PROPOSALS

Bids: May 29, 1958

Invitation for Bids

The City of Anchorage invites bids for the construction of a 600 ft. dock and port facility, consisting of a concrete deck on steel piling, railroad trestle and highway approaches, dredging, and two 40-ton and two 5-ton level-luffing cranes, at Anchorage, Alaska. Bids will be received by the City Manager until 2:00 p.m. Alaska Standard Time, May 29, 1958, at which time bids will be publicly opened.

Plans, specifications, and bid documents will be obtainable on or after April 18, 1958 at the office of the City Purchasing Agent, First Avenue and Post Road, (mailing address Box 400), Anchorage, Alaska, or at the engineering office of Tippetts-Abbett-McCarthy-Stratton, 62 West 47th Street, New York 36, New York. A deposit of $50.00 will be required for documents, of which $25.00 will be refunded provided documents are returned in good condition prior to July 1, 1958.

The City reserves the right to reject any or all bids, and to waive informalities in the bids.

CITY OF ANCHORAGE
By George C. Shannon

Engineering News-Record

Reaches Your Local Contractors

Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS

Bids: May 27, 1958.

Contract LT-160.056

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
RESTORATION OF STREET AND SIDEWALK PAVEMENTS
WEST 38TH AND 39TH STREETS

Sealed proposals for the restoration of street and sidewalk pavements of West 38th and 39th Streets in New York City will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 27, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 8, 1958

Bids: May 15, 1958

Power Authority of the State of New York
Niagara Power Project

ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
MOTOR/GENERATOR MAIN LEADS—ISOLATED PHASE BUS
FOR
TUSCARORA POWER PLANT
SPECIFICATIONS NO. PA-N-25011
NIAGARA CONTRACT NO. NP14

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Tuscarora Power Plant Area, University Siding, New York, of generator main leads—isolated phase bus for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 11:30 A.M. Eastern Daylight Saving Time on the 15th day of May, 1958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 4 sets of 15 kv isolated phase bus and associated equipment in accordance with the bidding schedule.

Delivery of the equipment will be required beginning on or before September 1, 1960.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at 18th Floor the Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: June 10, 1958.

Contract NA-480.002

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
BUILDINGS NOS. 150, 151, 152 AND 153

Sealed proposals for the construction of Cargo Buildings Nos. 150, 151, 152 and 153 at Newark Airport, Newark, New Jersey will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 10, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days ater the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 8, 1958

Bids: June 17, 1958.

East Seven Mile Relief Sewer
Department of Public Works
City of Detroit, Michigan

CONTRACT PW-3003

Sealed proposals for a relief sewer located in Conant and Emery, from Conant and Seven Mile Road to Coventry and Emery Avenues, will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit Time, June 17, 1958, and then at such place and time publicly opened and read aloud.

The work consists of the construction of approximately 0.56 miles of 13'-6" inside diameter concrete tunnel sewer in Conant and Emery, from Conant and Seven Mile Road to Emery and Dequindre, and approximately 0.94 miles of 12'-3" inside diameter concrete tunnel sewer in Emery from Dequindre to Coventry. Also included are special structures at Dequindre, Oakland, and Coventry and other related work at various locations.

The Bidding Documents may be examined at the Office of the City Engineer during business hours, and copies may be obtained upon deposit of $25.000 per set, which deposit will be refunded upon the return of the Bidding Documents in good condition within 10 days after the date for opening of bids.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works
M. F. WAGNITZ
City Engineer

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Subject to Agency Commission.

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P. O. Box 12, N. Y. 36, N. Y. May 22nd issue closes May 12th

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DESIGN
AND
FIELD
FOR WORK IN AFGHANISTAN

DESIGN

Must be a graduate Engineer with several years experience in hydraulic and structural design, preferably in layout and design of irrigation and drainage systems and appurtenant structures.

FIELD

Graduate Engineer or equivalent experienced in farm irrigation systems and water management.

Salary Commensurate with Ability
Single Status
Two Year Contract
Room and Board Furnished
Vacation Allowance

Send resume with recent photo to:

MORRISON-KNUDSEN AFGHANISTAN INC.
120 Montgomery
San Francisco, California

ENGINEERS

There's Opportunity on Beautiful Gulf Coast

Highway Design Engineers
Bridge Design Engineers

Openings available in senior, intermediate, and junior grades. Permanent positions for competent adaptable men. Ideal working conditions in our own new modern air-conditioned building. Unsurpassed company-paid hospitalization, life insurance and retirement plans.

Excellent opportunity for professional experience and advancement. 40-hour week. Liberal salaries. Send complete resume of education and experience, with salary requirements to:

PALMER & BAKER
Engineers, Inc.
P. O. Box 346 . Mobile, Ala.

ASSISTANT TRAFFIC ENGINEER

$597 to $776 a month, including annual automatic and longevity salary increases. **Starting salary** may be at any step in basic range ($597 to $712) depending upon qualifications. Interview and moving expenses paid by city. U. S. citizenship required, but no residence restrictions for man to begin work. Registration as a professional engineer required. Wisconsin Retirement Fund and Social Security Benefits.

CITY PERSONNEL DEPARTMENT
404 City-County Building,
Madison 9, Wis.

WANTED
Marine Construction Superintendent
for Southeast Location

P-7800, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-7501, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

CONSTRUCTION ENGINEERS

Consulting firm specializing in Construction Engineering seeks graduate engineers with five years or more experience in construction: Plant and equipment design, estimating, supervising or field engineering. Jobs in U.S. or overseas. Send full particulars.

JACOBS ASSOCIATES
503 Market St. San Francisco 5, California

YOUNG CONSTRUCTION ENGINEERS

FIELD EXP. REQUIRED IN HEAVY STRUCTURES. GIVE EDUCATION, EXPERIENCE, AND SALARY WANTED.

P-7925, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. MicMgan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Wanted — Construction Superintendents — Long established Mid-West General Construction firm has openings for two or more qualified field construction superintendents. Engineering background preferred but not required. Applicants should be aggressive, cost conscious and well grounded in reinforced concrete, structural steel, and masonry structures. Complete education, experience data and salary expected should be furnished in first reply. P-7751, Engineering News-Record.

Superintendent Wanted for road construction. Rieth-Riley Construction Co., Inc., P. O. Box 477, Goshen, Indiana.

Wanted: Good Land Surveyor, good opportunity for right man. Steady work. Inquire by letter or personal appointment Saturday mornings to: Howard Madison, Engineer & Land Surveyor, 40 Hoy Ave., Fords, N. J. (Tel. HI 2-3373).

Resident Engineer, registered engineer with qualifying experience on construction of 1.5 mgd capacity sewage treatment plant and intercepting sewers. Complete resume of experience and education and statement of salary requirement in letter of application. Jones, Henry & Williams, 821 Security Building, Toledo 4, Ohio.

Equipment—Supervisor N.E. Contractor— year round employment. Excellent opportunity. Must have had similar previous employment. Salary commensurate with ability. P-7870, Engineering News-Record.

Bridge Designing Engineer, well qualified. Forward resume of education and experience with salary requirements to Macomber & Faber, 1824 N. 4th St., Harrisburg, Pa.

Civil Engineer for Public Works Department of northern New Jersey suburban municipality for surveys and construction, field and office. Good opportunity, excellent benefits and working conditions. State education, experience and salary requirements. P-7891, Engineering News-Record.

Public Works Engineer for northern New Jersey suburban municipality. Requirements: Knowledge of field and office work in connection with municipal improvements; working knowledge of water distribution system; familiarity with mechanical equipment; license, or eligibility to acquire in near future. State education, experience and salary requirements. P-7902, Engineering News-Record.

Registered Civil Engineer (State of Florida) needed for Central Florida City—population 20,000—with municipal engineering experience; must be capable administrator with good engineering background; able to expedite projects and building programs; well acquainted with storm drainage, sewerage, streets. Give resume and salary requested. P-7940, Engineering News-Record.

Experienced structural steel detailer wanted. Apply in person or by letter to A. Leo Nash Steel Corp, 50 East Mill St., Pittsfield, Massachusetts.

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

(Continued on opposite page)

WORKING OVERSEAS?

USE O.C.A. MEN!

- **THEY ARE EXPERIENCED**
- **WILL REDUCE TURNOVER**
- **DEVELOP BETTER FOREIGN RELATIONS**
- **AVAILABLE: 72 HOURS**

EMPLOYER SERVICE FREE, INCLUDING COMPLETE PERSONNEL PROCESSING;
WAGE SURVEYS;
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FOREIGN LABOR MARKETS;
CONNECTIONS 63 COUNTRIES.

For Details

OVERSEAS CRAFTSMAN'S ASSOCIATION
426 South Spring Street
Los Angeles 13, California
Founded 1946

HIGHWAY MAINTENANCE ENGINEER

For Latin American assignment.
Must speak Spanish.

Write giving qualifications and references to

Rader and Associates,
111 N. E. 2nd Avenue,
Miami, Florida

OPPORTUNITY FOR

CONSTRUCTION EXECUTIVE!!

A mid-Western Construction Company doing a 12-million dollar volume in highway and public utility work, wants a man age 30 to 40, with a good record of performance as an executive handling an organization of this size from the top level, and who is worth a starting salary of $20,000 to $25,000 a year with the opportunity of increasing income based on performance. Only top quality men need apply, and every application will be handled in the strictest confidence.

P-7927, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

To Employers Who Advertise for Men:

The letters you receive in answer to your advertisements are submitted by each of the applicants with the hope of securing the position offered.

When there are many applicants it frequently happens that the only letters acknowledged are those of promising candidates. Others do not receive the slightest indication that their letters have even been received, much less given any consideration. These men often become discouraged, will not respond to future advertisements and sometimes even question if they are bona fide.

We can guarantee that *Every Advertisement Printed Is Duly Authorized.* Now won't you help keep our readers interested in this advertising by acknowledging every application received, even if you only return the letters of unsuccessful applicants to them marked, say, "Position filled, thank you." If you don't care to reveal your identity, mail them in plain envelopes.

We suggest this in a spirit of helpful co-operation between employers and the men replying to Positions Vacant advertisements.

Classified Advertising Division
McGRAW-HILL PUBLISHING COMPANY
"Put Yourself in the Place of the Other Fellow"

CONSTRUCTION MANAGER AVAILABLE

20 years experience in building construction. Can take complete charge of all operations. Have proven record with good references. Foreign and domestic experience. Would be well qualified to manage branch office in SW USA for large construction firm. Presently employed but can be available in reasonable length of time. Can be available for personal interview.

PW-7711, Engineering News-Record
68 Post St., San Francisco 4, Calif.

POSITIONS VACANT

(Continued from opposite page)

Wanted: Superintendent for asphalt paving projects, and one asphalt plant foreman. Work is in Northern Illinois and Chicago Area. Positions are on permanent year-round basis. Call Arcole Midwest Corporation, 3225 Main St., Evanston, Illinois. Phone: Orchard 3-4900.

Wanted: Engineer Estimator, Missouri General Contractor, work in home office estimating heavy and highways, including bridges, airports, dams, earth and concrete. Experienced estimator only need apply. Salary open as to qualifications. P-7920, Engineering News-Record.

POSITIONS WANTED

Engineering Executive. Heavy industrial and civil experience; all phases of administration and management. Organize and direct large design jobs or work in consulting and exec. asst. capacities. Proposals, reports, contracts, liaison. P.E. in 3 States; NBER Certificate. PW-7748, Engineering News-Record.

2 Civil Engineers (grad. 1944) w. extensive experience in estimating, letting of sub-contracts, field supervision of multi-million dollar projects—desire to establish Division-office for General Building Contractor under a percentage of net-profit basis. PW-7743, Engineering News-Record.

District Sales Manager or Sales Engineer Grad. Civil Engineer—Age 41—presently employed—8 years Sales Engineering and 7 years District Sales Management experience. All experience with leading manufacturers of steel products for sale to the construction and engineering industries. Have knowledge and judgement based on selling and management experience in these markets to skillfully handle sales to Contractors, Industrial, Consulting and Government Engineers. Resume available. PW-7821, Engineering News-Record.

Civil Engineer, Registered, Member A.S.C.E., over 20 years experience in Highway and Expressway Design, 10 years in responsible positions, interested in making connection with consulting firm. Salary and location open. PW-7732, Engineering News-Record.

Structural engineer, 25 years experience design and supervision of design. PW-7729, Engineering News-Record.

Civil Engineer, M.ASCE, 62, degrees, state licenses, 35 years experience; design, construction, and administration; bridges, parkways, thruways, airports, harbor works, railroads, underpinning and foundations. PW-7753, Engineering News-Record.

Constructor's Engineer—indust. & commercial exp. in design office; constr. plant & field will sell, estimate or build—U.S.A. or foreign. PW-7771, Engineering News-Record.

Construction Engineering & Management— BSCE, 38, offers excellent experience, domestic and foreign, on heavy concrete, earthwork and hydro construction, emphasis on cost and planning. Desires responsible position with an aggressive contracting organization. PW-7861, Engineering News-Record.

Construction Engineer, 34, BSCE, 8 yrs. experience in field engineering and contract management for industrial construction. U.S. or Foreign. PW-7812, Engineering News-Record.

Accountant experience both field and home office, Joint Ventures, heavy construction, dams, roads, under ground systems air fields, industrial, water and sewer, go anywhere. PW-7833, Engineering News-Record.

POSITIONS WANTED

Civil Engineer: 33, M.S. and P.E. Seven years teaching, principally Structures. Varied field experience. Currently Assoc. Prof. Seeking challenging position in Field, Office, or Education. PW-7767, Engineering News-Record.

Construction Manager: 15 years diversified experience, Exec. Ability, Engineering and Field Supervision, Estimating, Expediting. Complete Industrial and Power Plant Building Construction, with Process Installations, from customer contact to completion of projects. Desire permanent connection with Engineering and Construction Firm, Industrial Firm or expanding Power Utility Co. PW-7865, Engineering News-Record.

Architect, engineer, construction manager. P.E., R.A., (N.J.); M.S. in mgnt. engrg. Vice Pres. small const. co. doing design conc. precasting, struct. steel fabrication & gel. construction for industrial bldgs. design, supervision, sales, client relation etc. Grad. finest schools Engrg. and Art. 37, married. Good for consulting office, construction firm, bldg dept. large industry, etc. prefer North Jersey or N.Y. but try me anywhere. PW-7881, Engineering News-Record.

Construction Superintendent—General Construction; PW-7720, Engineering News-Record.

Civil Engineer with 30 years of procurement, appraisal and estimating experience can take over or organize estimating dept. for contractor. Registered prof. Engr. experienced in water & sewage plants construction, bridges, foundations, general bldg. Long record of field and office administration. PW-7896, Engineering News-Record.

Sales Executive—Presently managing sales office. Civil Engineer, Age 33. Will relocate. PW-7892, Engineering News-Record.

Civil Engineer, 26, BSCE, MSCE, 3 yrs. exp.; field & office; desires position with gen'l contractor; New York or Conn. area. PW-7918, Engineering News-Record.

Project Director, General Manager, 39, heavy construction Govt. and State, Florida highway construction 12 yrs estimating and field experience, graduate engineer and now employed. PW-7915, Engineering News-Record.

Materials Engineer — Administration, engineering and laboratory supervision on multi-million dollar Government and private projects. Soil Mechanics—specifications, design and construction of roads, airfields, dams, structural foundations, site grading. Concrete and Asphalt—specifications, mix designs, batch plants, placement, pavement design. Experience also—prestressed concrete, precast units, structural steel. PW-7938, Engineering News-Record.

Civil Engineer available for overseas work. 26, B.C.E., 2 years experience in both structural design and construction. Married to an R.N. Position for her is desirable but not mandatory. PW-7939, Engineering News-Record.

Reinforcing Steel Detailer—Estimator with 20 years experience available. PW-7914, Engineering News-Record.

BSME, MSME MIT & CIT, 3 yrs construction contract experience, Lt (jg) U.S.N. Civil Eng'r Corp. Desire engineer-estimator position, medium size U.S. mechanical contractor. PW-7906, Engineering News-Record.

Project Bridge Engr., 31, graduate P.E. 9½ yrs. bridge design, and design supervision exp. New England or Mid-Atlantic. PW-7904, Engineering News-Record.

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(Classified Advertising)

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ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div of this publication. Send to office nearest you.
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CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

LIQUIDATING
Low Hours
DIRT MOVING SPREAD

2—HD16 A.C. Doziers S/N 385 & 565 W/D.D. Power Units—both with Torque Convertors
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1—AD40 A.C. Motor Grader S/N 1304
1—HD11 A.C. Dozier S/N 77723 W/D.D. Power Unit
1—HD11G A.C. Front End Loader S/N 2106
2—S7 Euclid Scrapers S/N 18942 & 20381—GMC 471 Engines
2—76FDT Euclid Scrapers S/N 76FDT-19221 & 76FDT-19219 Cummins Engines
1—S12 Euclid Scraper S/N 20734 GMC 671 Engine
1—TS200—A.C. Scraper S/N T200-2343—Buda Engine
1—#60 Cat Scraper S/N 1D1636
1—#70 Cat Scraper S/N 3W5239
1—D7 Cat Dozier S/N 3T14997 w/Angle Dozier w/D.D. Power Unit

WILL SELL AS PACKAGE OR EACH PIECE SEPARATE

Contact: B. C. Gammon
EDGAR STEPHENS CONSTRUCTION CO.
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FOR RENT

1—3250 Manitowoc Shovel 2½ Cu. Yd.
1—HD-15 Loader.
3—15 Ton Euclid End Dump Trucks.
1—125A Michigan Front End Loader.
1—Oliver 88 Backhoe.

—ALL IN EXCELLENT CONDITION—

TUCKAHOE CONSTRUCTION CO. INC.
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LOW COST INSTALLATION AND OPERATION

CABLEWAYS

IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS

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OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year

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MIXERMOBILE

Two cubic yards in good condition or 34E dual drum paver.

J. M. ODOM
GENERAL CONTRACTOR
P. O. Box 774, Austin, Tex.

NEW PLATE
JOB SURPLUS

2" & 1" thick
Various widths & lengths
Example 98" x 2" x 100"
100 tons available

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FED. SPEC.
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Sterling 3-2271

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3—Browning, 30 Ton, Cat. Diesel Loco. Crane
1—Whitcomb, 65 Ton, Diesel Elec. S/N 60436
2—Plymouth, 10 Ton, Diesel Std. Gauge
3—Brookville, 8 Ton, Std. Gauge
1—Vulcan, 6 Ton, 36" Gauge, Gas

R. A. PARKINSON & SON
THOROFARE, N. J.
TILDEN 5-5200 *(8 miles south of Camden)*

New Equipment Below Dealer's Cost
Cash—$29,220

Allis-Chalmers Model HD21 Tractor with Model CT-214 Tipdozer and DDPCU Model 281.
F.O.B. Sidney Center, N. Y.
JESS F. HOWES Sidney Center, N. Y.
Tel. Undadilla 3051

WANTED
Concrete Form Panels

State Quantity, Sizes, Make, Accessories, Price, etc.
W-7772, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

One—2 drum or 3 drum #1400 AMERICAN HOIST
One—2 drum or 3 drum #1800 AMERICAN HOIST

PHIL WALKER
4862 N. 41st Street MILWAUKEE WIS.

FOR SALE

1—Barber-Greene 6000# Batch-O-Matic asphalt plant, complete with power
1—Madsen 4000# asphalt batch plant
1—Parsons Trencher—Model 221
1—Johnson cement bin with hopper bottom and car unloader, Model 1000
1—Johnson three compartment aggregate bin with automatic electric control
1000'—12" x 12" Super Road Forms with keys

Other Concrete Paving Equipment

ALEXANDER CONSTRUCTION CO., Inc.
714 Edgmont Avenue Chester, Penn.
Telephone 4-7649

300 BRAND NEW
I. R. CARBIDE INSERT BITS

1⅜", 4 point, 1 centerhole, 1 sidehole, Series 115 thread.
Will sell best offer.
M. SILVA & CO.
82 Wall St. New York 5, N. Y.

FOR SALE

2 small wooden deck scows 80' x 28' x 7' Very suitable for crane operation.
1 floating crane 40 ton lift, oil fired. Hull 100' x 40' x 9'. Steel mast and boom.

FS-7924, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED
Austin-Western Hydro Crane
LATE MODEL

FRED G. HEYDT CONSTRUCTION CO. INC.
Longfellow & Viele Ave., New York 59, N. Y.
WY 1-2500

Large Quantity
bank run and fill available

via rail or truck, situated in Rockland County, N. Y.

FS-7921, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FOR SALE

1954 Jaeger Aggregate Spreader Model SPS-2G-$5,500.00
1954 Bros Circulating Heater Model S-C-$3,250.00

CENTRAL NEW YORK CONTRACTING CO., INC.
224 Wolf St. Syracuse 8, New York

Buying
Good USED Equipment

is frequently the difference between having needed equipment or doing without it.

BUSINESS OPPORTUNITIES

Surveying firm, estab. 10 yrs., seeks association with consultant on highways, airports, water supply, etc. You design, we do all field work. Available. BO-7855, Engineering News-Record.

Small consulting firm (heavy and building construction) with hard working principal and impressive list of clients desires to merge with firm of similar background for purposes of expansion, and sharing of responsibilities. BO-7893, Engineering News-Record.

FOR SALE
MANITOWOC MODELS 3500 & 3900
Lifteranes
Forsythe Equipment Co., Inc.
37-11 Vernon Blvd.
Long Island City 1, N. Y.

FOR SALE
REASONABLE
120" Semi-Elipitical BLAW-KNOX STEEL FORMS
50' Inside & 25' Outside
Complete with Travelers
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50th St. & 2nd Ave., B'klyn 32, N. Y.

ASSOCIATED PIPE & FITTING CO.

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"FASTER FROM FOSTER"
RAIL
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Nation's Largest Warehouse Stocks
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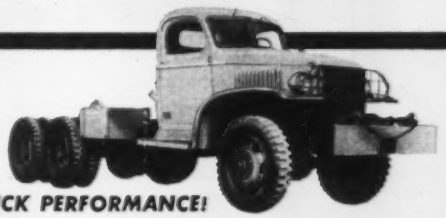
GMC 6x6 NAMED ARMY'S BEST ALL-AROUND TRUCK!



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- Double Traction for Mud!
- Special "Off Road" Design!

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GUARANTEED! NEW-TRUCK PERFORMANCE!

From Government Storage — these all-wheel-drive GMC 2½ ton 6x6's were specially designed by the U. S. Army to take the roughest terrain in all kinds of weather. These unused 6x6's can do the same job for you in all your truck jobs;whether in a muddy field or along a super highway. Processed—by Memphis Equipment Company—down to the last bolt to assure you of receiving the finest unused GMC 2½ ton 6x6 trucks available today. Parts available anywhere in the nation.

For specifications, prices, delivery—write, wire or phone collect—JAckson 5-7841
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- DRIVING CAPS
- HOISTS AND BOILERS
- STEEL LEADS
- PILE DRIVER HOSE
- STEEL SHEET PILING

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KANSAS CITY, KANS.

FOR SALE
Used plain end Pipe Piles, 12¾" O.D. ⅜" Wall, 6350 L.F. 16-30' lengths—$3.50/L.F. New 72 pieces 12" WF @106≠—32' long $7.00/cwt. FOB Evansville, loaded cars or trucks.
TRAYLOR BROS., INC.
Sta. B. Box 66, Evansville, Indiana

CRANE
FOR SALE
Model 1520, Unit Self Propelled Crane, 20-ton capacity, 45-ft. boom. Like new condition, used less than 500 hours for steel erection only.
H. L. Pray Mfg. Co. — Box 3335
Phone MA 6-4840 — Tulsa, Oklahoma

U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. ALL shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
DEPT. ENR 68 — SIMPSON, PA.

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40 BRAND NEW BUCKETS
Save up to 50%!

CLAMSHELL BUCKETS:
14—2 yd. P.M. Model Ab-1XE Hi Power ex. hvy. duty, 1½" lips and 1½" bowl. Wt. 12,700≠ ea.
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6—2 yd. McCaffrey Mdl DLM, ex. hvy construction, 7320≠ ea.
5—2 yd. Erie Model X06, type GP2, General Purpose, Weight 7500≠ each.
1—2 yd. Yaun gen. purpose, 6816≠.
1—2 yd. B.K. Mdl 724H gen. pur. Wt. 6700≠
(all above fitted with teeth and extra cwt.)

DRAGLINE BUCKETS
2—2 yd. Yaun Dragline buckets, med. duty, solid shell, St. 4200≠ ea.
1—1½ yd. Yaun heavy duty bucket, Wt. 3400≠.
(All unused, in perf. cond. Prompt shipment).

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NEW • USED

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STRUCTURAL STEEL

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SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

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1 Multifoote 34E Double Drum Paver

1 Apsco P125 Base Paver

1 Blaw-Knox XC Transverse Finisher

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STEEL BARGES and WILEY WHIRLEY FLOATING CRANES

Capacity to 100 tons
Continuous Production
Prompt Delivery

Crane Shown 40 Tons, 40 Ft. Radius With 20′ Turntable, 100 Ft. Boom

HAVRE DE GRACE SHIPYARD INC.
Havre De Grace, Maryland

FOR SALE

48B Bucyrus Erie Shovel diesel 2 cy
10,000′ 8″ x 9″ road forms
1,550′ 6″ x 6″ road forms*
2,500′ 16″ x 12″ airport forms*
*Used four months only

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CONSTRUCTION EQUIPMENT

Lorain Moto-Crane, MC-3, 90% new cond. $10,500.
Caterpillar, Bulldozer, D-7, $7500.
Buffalo-Spgfld. Roller, 5-8 Ton Tandem, Rebuilt—$3500.
Unit, 10/20, ¾ Yd. Crane, GM 371, $8500.
Own, 1¼ Yd., Model K, Wt. 38258, $1200.

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THOROFARE, NEW JERSEY
TILDEN 5-5200 *(8 miles So. of Camden)*

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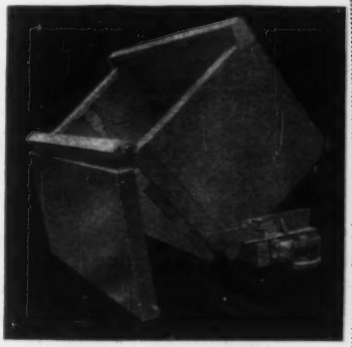

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FREE Bulletin No. 18 shows car details: No. 21 illustrates Automatic Coupler.

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More Waterworks Construction

THE AMERICAN WATER WORKS ASSOCIATION is to be commended for its plan to stimulate a rise in the construction rate of the U.S. water supply industry to a $750 million a year level (ENR May 1, p. 25).

Aside from the fact that a higher annual investment in new water supply facilities is sorely needed to bring existing standards of service up to those of the pre-World War II period, the hoped-for spending increase of $150 million to $200 million over the next 12 months is timed ideally to aid in counteracting the present recession. It is also to be noted that the increase in construction would be accomplished without a penny of federal aid; the drive is gimmickless in this regard.

Substance of the waterworks industry drive is a public relations campaign aimed at convincing voters across the country that safe and reliable water supplies are worth paying for. Although the brunt of the campaign will be carried by local water supply agencies, AWWA has earmarked approximately $40,000 of its reserve fund to spearhead the effort. In future years, money required will come from a dues increase of 50% (from $10 to $15 for members) authorized by the AWWA board.

By these actions, the 12,000 member American Water Works Association has made clear it means business in what it calls a "do it yourself, do it now" push for bigger and better water systems. In these days of special appeals to Washington on almost any pretext, it is inspiring to have someone propose to go it alone. The AWWA deserves to succeed in its new endeavor, which warrants the support of the construction industry.

Antidote for Gloom

ARE YOU RUNDOWN from overindulgence in unattractive statistics, mentally fagged out from trying to fathom the recession cures emanating from Washington, confused by the anvil chorus of dissonant sounds on the international front? One cure for such debilitation is just to look the other way, preferably in the direction of one's own job and responsibilities. More often than not, things can be seen that will make a brighter picture. At the very least, perspective can be returned to a more normal state, for gloom is seldom pervasive.

The coming of spring may in itself exert an automatic uplift on sagging spirits. It usually does in the construction business. Right now, however, there is more than good weather to cheer about. Construction contracts in April chalked up their fourth consecutive monthly rise. Construction machinery buying has increased sharply. The federal government speed-up in contract letting soon will bear fruit on such huge operations as the Upper Colorado Project, the ICBM base at Cheyenne and Oahe Dam on the Missouri River. And there are still other signs of a pickup.

But it is not necessary to take refuge in improving statistics in order to see things in a better light. Two hundred engineers from the four states of Nevada, Utah, California and Arizona, who attended the Pacific Southwest Council Conference of the American Society of Civil Engineers in Phoenix two weeks ago, found that an improved state of mind emerged just from unadulterated consideration of civil engineering and the job it has to do. By taking medicine out of the same bottle, any other gathering could achieve the same result, or an individual could take the cure in his own office.

At Phoenix, neither the program nor the anteroom talk contained more than passing reference to a recession. Attention centered on absorbing design and construction information that could be put to use to do a better job.

Concern for the future, of course, was not absent, but it was an optimistic kind of concern. Focused on the development of young people into capable engineers, it was expressed by a technical paper competition among students from the universities of the four states. To hear these young men discourse learnedly on such subjects as geodesic domes, engineering education, crushed vs. natural aggregates, hydraulic design of ocean outfalls, soil mechanics and right-of-way problems would cheer up the most gloomy listener.

Moreover, around and about these visitors in Phoenix were other things with a rosy hue. They saw full reservoirs behind the Salt River dams—a situation that relieves this water-conscious region's principal anxiety for the first time in several years. They saw huge 90 ft dia radio telescopes being fashioned to watchmaker tolerances in the plant of the Allison Steel Manufacturing Co., where fabricating activity is also being enlivened by structural steel orders from copper companies, which are continuing to build despite their own slump in business. And they saw a fine new headquarters building just occupied by a state highway department busy up to the hilt on federal-aid roads, and ready to do more on other roads if the legislature will get up the money.

Each of these activities spells health, not stagnation, suggests optimism, not gloom. And they can be matched in almost any other city if one just seeks to single them out.

The construction industry has a big job to do, now and always in this growth economy of ours. Right now it has the unrivalled opportunity to make more of a contribution than usual because growth in some sectors of the economy is temporarily slowed. Gloom, therefore, has no place in construction thinking, and should be chased away by any of the many antidotes that are now available.

The ASCE conference in Phoenix ended with a harvest hands dinner of beef and beans. That's construction fare, and doubly appropriate today when construction's job ahead is of the "beef and beans" variety.

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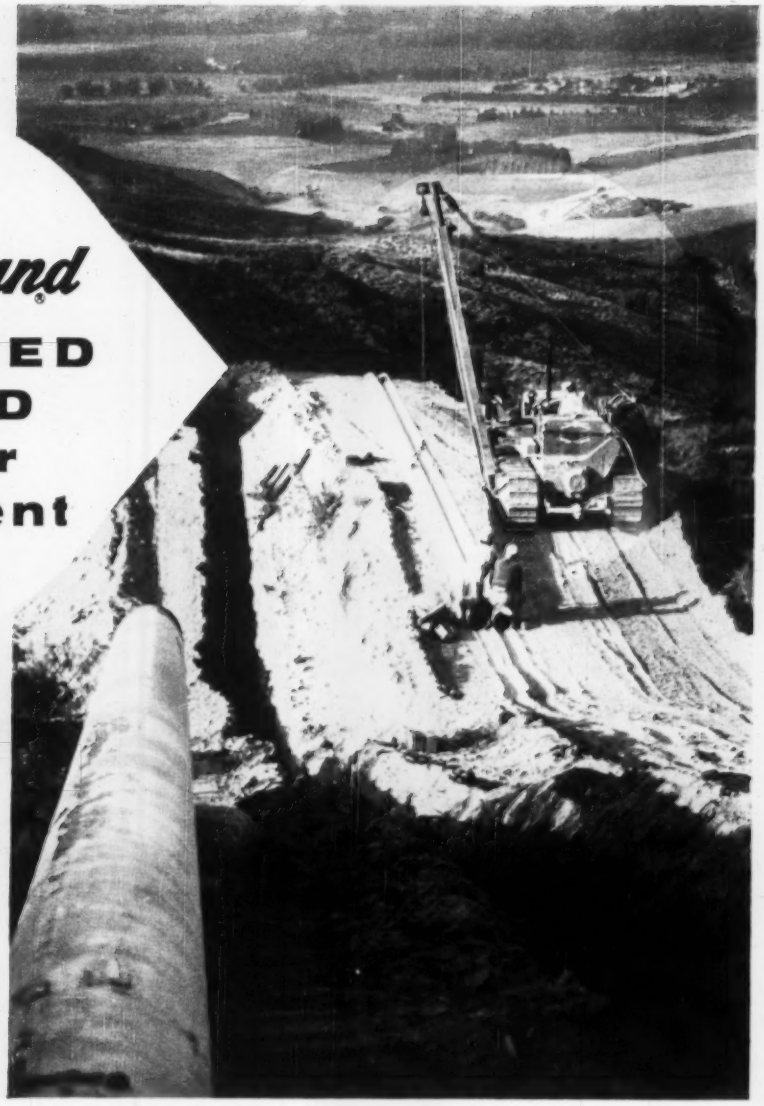

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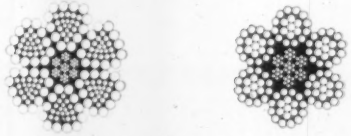

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